ADMINISTERING AUDIO-VISUAL SERVICES

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ADMINISTERING AUDIO-VISUAL SERVICES

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PREFACE

THIS book has its roots in twenty-five years of experience with continuous interest, either direct or indirect, in the field of audio-visual instructional materials. In the role of science teacher, city director of audio-visual services, school principal, U.S. Navy training aids officer, and finally as a university audio-visual center director, opportunities to define problems and seek their solutions at different levels of action have been many.

One of the aims of the author's university teaching mission is to develop competence in his students to utilize audio-visual materials effectively, and then to build on this foundation the understanding and ability in qualified individuals for providing the audio-visual services that modern education demands. The development of this audio-visual education specialist confronts the author, as well as teachers in almost every school of education in the land, with many serious problems. One of them—the organization of information for the efficient promotion of learning experiences for a fundamental course in the administration of audio-visual services—is the primary focal point of this book.

First and foremost the contents of this textbook are directed toward graduate students who are undertaking their preparation for leadership in the audio-visual instructional materials field, but the very nature of the purpose and arrangement of the content enhances its value as a handbook for school-building audio-visual program coordinators, and as a guide for planning by school superintendents, principals, and curriculum specialists.

Years of experience have led to the belief that there are no pat answers, no single solutions, to what appear to be the common problems of audio-visual service administrators. Students and other readers of this book should know that, as a final step in preparation for this volume, the writer completed a 12,000-mile trip visiting city-wide as well as university service centers in the United States. Observation of the wide variety of local environments and the unique points of view within such centers cautions against setting up an inflexible pattern of professional effort. This book emphasizes sound solutions to unique local problems and challenges directors of audio-visual service programs to move at optimum speed in directions that will prove to be fruitful under close scrutiny and evaluation. This book does not provide a recipe, but it does present some basic points of view that should aid the prospective director in his preparation for creativity.

Instructors and students alike should note the questions, problems, and references for further study at the end of each chapter. Under the heading, "Suggested Activities," are some learning experiences that students can engage in with profit, working as individuals or in groups. In the author's own use of the assembled materials, the exercises marked with an asterisk are to be written out and handed in according to a time schedule agreed upon in class. Other activities may and should be suggested by both students and instructors according to special needs. Actually the "Suggested Activities" section constitutes a study and activity guide for the course for which this book is intended as a basic text.

The writer has drawn heavily upon the wide-spread periodical literature, and upon textbooks, yearbooks, manuals, and pamphlets that have appeared during the past ten years. The permission of such publishers and authors to use their materials as needed is gratefully acknowledged, and due credit is given in the footnotes. Also gratefully acknowledged are the illustrations contributed by individuals, schools, and business organizations. Readers should note that the source appears with each illustration.

Special thanks are due members of the author's secretarial and technical staff for valuable assistance, and he is most grateful to the following audio-visual and instructional materials specialists around the country for taking time out of busy schedules to discuss with him problems, procedures, services, and trends in their respective programs: James W. Brown, Robert Burgert, Harold Coman, Clifford Costley, Edith Davidson Lind, Amo DeBernardis, Raymond Denno, Margaret Divizia, H. W. Embry, James Fitzwater, William Fulton, William Gnaedinger, Elizabeth Golterman, Wallace Hallberg, L. C. Larson, Richard Lewis, John Long, F. Dean McClusky, Russell Myers, Francis Noel, Kenneth Norberg, Sheldon Osborn, the late Helen Rachford, Paul Reed, Charles Reynolds, William Sanborn, Clarence Spencer, Ernest Tiemann, Arthur Theimer, A. K. Trenholm, Harold Walton, Don Williams, W. W. Wimberley, and Mary Zingheim.

The author is also indebted to Professor Max R. Brunstetter of Columbia University for the many helpful suggestions made in connection with his critical reading of the manuscript.

Finally, the author wishes to express his gratitude to his wife, Ernestine B. Erickson, who has so generously contributed to the completion of this undertaking.

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ADMINISTERING AUDIO-VISUAL SERVICES

CHAPTER ONE

THE AUDIO-VISUAL DIRECTOR VIEWS HIS JOB

ONE day in the late summer of 1945 the officer in charge at the Training Aids Center, U.S. Navy, Pearl Harbor, transmitted through appropriate channels an urgent dispatch requesting the delivery by air of 750 prints of a 1,000-foot film entitled *Combating Suicide Plane Attacks*. This film, as had been so many others, was rushed to fleet units in the Pacific forward areas to help in a vital instructional mission. Many years later this same officer stood in the study-print assembly room at the Los Angeles City Schools' Audio-Visual Center and took a picture of 1,000 sets of study prints on a single topic, *Conservation*, produced, assembled, and packaged on the spot, ready for distribution. Several days later in San Diego that same officer saw and heard canvas bags come sliding down a chute to the basement from the two floors above, where teachers' orders for publications, library books, textbooks, study prints, exhibits, films, and filmstrips had been filled and were now to be whisked away in a fleet of walk-in-type trucks to classrooms throughout the city; and a few days earlier in the instructional materials center for the Portland, Oregon, schools there had appeared an equally striking array of services for teachers.

The writer was that officer, off on a "busman's holiday" of 12,000 miles around the United States, visiting audio-visual education centers in city schools and universities and taking a close look at their functions and services.

The Los Angeles Audio-Visual Service Center, with a budget of close to one million dollars, booked 1,000 films a day, using IBM automatic machines. The Chicago center had already passed a peak-distribution figure of 15,000 motion pictures a month. A small city in California started off spending $9 per pupil on materials and equipment to inaugurate a new, independent instructional materials center. These cases together with the noteworthy Western county audio-visual service centers, the tremendous state college system in California, the comprehensive organization and activity (for example, at Indiana University), the new instructional television projects, the new eleven million dollar high school at Rochester, to mention just a few, seemed to reveal the diversity, the challenge, and the talent needed to provide comprehensive audio-visual instructional services for our nation's teachers. In the examples just mentioned and in scores of others, leaders emphasized their own unique convictions concerning titles and functions. Some said the title of "Specialist in Audio-Visual Communications," and all that this title implied, indicated the most promising pathway to significant service to teachers. Others were concerned with the title of "Director of Instructional Materials." Still others had no choice in the matter, as they were restricted in their expenditures by legislative action to *audio-visual* materials. All, however, seemed dedicated to the task of improving instructional effectiveness, whether their titles were Director, Supervisor, Coordinator, or Assistant Coordinator under a Director who had even broader instructional responsibilities.

The title of this book implies a restriction of its content to the audio-visual aspects of curriculum services to teachers. However, it is shown in a later chapter that the broadening of the base of services, and the integration of such services into ever-widening spheres of teaching activity, is a desirable and natural evolution. Thus, this chapter describes the audio-visual director's job in terms of functions restricted for the present only. Before viewing his job in greater detail, the director should note first the relationship of leadership to the success of audio-visual service programs, and then he should see himself as an executive, a supervisor, an audio-visual specialist, and as an equipment technician.

Leadership, a Characteristic of Successful A-V Services. An effective audio-visual service program doesn't just happen for a city school department, a county, a church, or for an industrial company. It is most likely to happen, however complex the environment, in locales where leadership for it exists on at least two levels. The first of these is the leadership in facilitating the inauguration of an operational plan of service, arising at the top administrative level of any organization. Such leaders must take overt action regarding the use and support of audio-visual instructional materials, and they must exercise skillfully the executive function of selecting a qualified person to implement the plan of action envisioned or the plan legislated by school boards or other law or policy-making groups. At the second level is the indispensable leadership of an individual who is charged with responsibility for developing and maintaining a service program.

Too often the writer has observed a tottering service program existing in peril and at great odds because, for example, a school superintendent has for one reason or another adopted a "laissez-faire" attitude. The same results may be observed when the leadership at the second, service organization level, resides in an unqualified person, an insecure committee, a too busy curriculum director, or in a group of individual school-building coordinators without adequate coordination, however deeply dedicated each is to his own program. The conclusion is obvious. Adequate leadership is one of the first essentials for the effective use of audio-visual methods and for the development of desirable audio-visual service programs. In a Michigan Audio-Visual Association publication, now unfortunately out of print, Lemler[1] generalized from reports of fourteen Michigan city and county programs, as follows:

> It is not surprising that such a broad program should have overlapping and interlocking problems which cannot be solved except through the united efforts of all school staff members. The audio-visual program is in a real sense an effort to mobilize for this united effort. Mobilization for

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[1] Ford L. Lemler (ed.), *Audio-Visual Programs in Action* (reports from fourteen Michigan school systems), prepared by members of Michigan Audio-Visual Association, Ann Arbor, Michigan, 1951, p. 1–2. (Out of print.)

anything implies centralization of responsibility. "Audio-Visual" mobilization is no exception. . . . The audio-visual program requires order, direction, and leadership. . . . It is clear that the best way to provide these essentials is to centralize responsibility in an audio-visual director or coordinator with the necessary competencies of leadership and administration.

The Director as an Executive. In whatever job situation the director of audio-visual services wishes to work, large or small, public school or private, city schools or university, state or county, he must function effectively as an executive. As such he must lead in the formulation of policy; see to its execution; must mobilize service personnel and train and deploy them for agreed upon undertakings; must develop understanding and support of the organization, its purposes and activities; must prepare and administer the budget; must develop close cooperative effort of all concerned; and must procure, distribute, and maintain necessary materials and equipment for use in an environment of appropriate facilities.

The Director as a Supervisor. Since the director under consideration is an educational worker, he must pursue vigorously his role of supervisor of instruction. As a supervisor the director of audio-visual services needs to see his mission broadly in terms of guiding teachers in specialized methods to greater valid accomplishment. Such a role will demand complex and effective action on his part as a leader working for the betterment of teaching-learning processes, will demand that he be a respected educator, bigger than the gadget and operating in a spirit of real service to teachers. He must not avoid, however, the work of identifying and correcting weaknesses in his sphere of responsibility. Such a role ties the audio-visual specialist irrevocably to the entire gamut of the curriculum.

The Director as an Audio-Visual Specialist. In the role of an audio-visual specialist, the director must be able to prescribe and advise with authority growing out of wide knowledge and experience in matters relating to the selection and use of a wide range of instructional materials; and he must be able to appraise and specify audio-visual equipment and facilities. In his role as specialist, the director must not shrink from effort to develop personal communicative skills. He can hardly escape in this role the necessity of becoming a producer of audio-visual materials. At least he must be prepared to serve as a consultant in terms of purposes, plans, scripting, and specifications for procuring laboratory services, whether the resulting material is to be a motion picture, tape, television program, or an overlay-type transparency.

The Director as an Equipment Technician. In his role as equipment technician it is essential that the director be familiar with the output standards of various types of audio-visual equipment. He must devise appropriate ways to have it inspected, cleaned, and maintained in satisfactory operating condition. Adequate understanding of mechanical and electronic operations is not required for the purpose of becoming a repairman but rather to facilitate correct decisions regarding planning, budgeting, training of operators, local servicing contracts, and employment of technical personnel, to mention just a few.

Certainly any director who endeavors to supply the leadership implicit in the closely interwoven roles just described will find himself challenged during a lifetime of professional effort. How did such an educational job evolve?

The Director's Job in Historical Perspective. The roots of the audio-visual director's job are deep in the history of education, deep in the forces that led to the rise of such thinkers as Francis Bacon, Ratke, Comenius, Rousseau, Basedow, Pestalozzi, and Froebel. Cubberley[2] in a succinct introduction to his discussion of the rise of realism in education wrote:

> . . . during the sixteenth century, and as a further expression of the new critical spirit awakened by the Revival of Learning, a demand for a type of education which would make truth rather than beauty, and the realities of the life of the time rather than the beauties of a life of Roman days, the aim and purpose of education. This new spirit became known as Realism, was contemporaneous with the rise of scientific inquiry, and was an expression of a similar dissatisfaction with the learning of the time. As applied to education this new spirit may be said to have manifested itself in three different stages, as follows: 1. Humanistic realism, 2. Social realism, 3. Sense realism.

However complex the environment, and however difficult to designate who got the idea first, it is sufficient here to indicate that the concept of the picture, object, and field study, as having value in the teaching process, spread to America.

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[2] By permission. From (Helen Cubberley ©) Ellwood P. Cubberley, *The History of Education,* Houghton Mifflin Company, Boston, 1948, p. 397.

But other significant events reported by Quigley[3] need to be mentioned because of their bearing on the American audio-visual education climate. In 1645 Athanasius Kircher invented the magic lantern at Rome and used drawings for his first screen show; in 1671 this inventor published the second edition of *Ars Magna Lucis et Umbrae*, with an expanded treatment of the magic lantern and specific instructions on how it could be used for entertainment and instruction; in 1870 Bourbouze used posed motion pictures at the Sorbonne University to show the actions of pistons, vapor, and air machines; in 1889 George Eastman applied for a patent on flexible photographic film; in 1887 H.W. Goodwin, an Episcopalian minister, conducted a magic lantern entertainment for his congregation; in 1891 Edison completed his kinetograph camera and kinetoscope viewing apparatus; in 1894 Edison started his peep-show in New York; in 1895 successful screen projections were conducted by Louis and Auguste Lumière with the Cinematographe in France, by R.W. Paul with the Bioscope in England, and by Armat, Jenkins, Lathams, and others in the United States; and in 1896 screen projection became a commercial reality on April 23 at Kosten and Bial's Music Hall, New York City, using a series of short films on an Edison-made, Armat-designed Vitascope.

Krows[4] pointed out another interesting fact as follows: In August, 1910, Frank Woods wrote in the *Dramatic Mirror* of New York City, ". . . out of 140 releases in that one month, thirteen percent were scenic and industrial subjects." Elliott[5] emphasized this also by revealing that, "American movie programs of 1910 included, along with entertainment reels, such films as *The Taos Indians of New Mexico at Home, The Tea Industry of the United States, The Story of Coal,* . . . and *The Story of Pottery*. . . ." Lyceum lecturers must also have taught valuable lessons in the value of the film as an educative medium, and students have but to look up a certain 1925 issue of Colliers magazine and they can read Edison's own words through an interviewer:[6]

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[3] By permission. From Martin Quigley, Jr., *Magic Shadows, The Story of the Origin of Motion Pictures*, Georgetown University Press, Washington, D.C., 1948, pp. 163–176.

[4] Arthur Edwin Krows, "Motion Pictures Not for Theatres," *Educational Screen*, Vol. 17, No. 7, September, 1938, p. 211.

[5] Godfrey M. Elliott (ed.), *The Film and Education*, The Philosophical Library, Inc., New York, 1948, p. 13.

> In short our system of education is leaving a good deal of its work to an untrained imagination . . . . Develop the imagination by all means, but develop it from actualities . . . we must substitute for mental pictures of how the world might look and act physical pictures of how it really does look and act. . . . And so we get back to the big hope I had in the beginning for the motion picture camera.

In a later issue of the same magazine Edison[7] made another significant statement that seems to have an air of disappointment about it:

> It may seem curious, but the money end of the movies never hit me the hardest. The feature that did appeal to me about the whole thing was the educational possibilities . . . when the educators failed to respond, I lost interest . . . maybe I'm wrong, but I should say that in ten years textbooks as the principal medium of teaching will be as obsolete as the horses and carriages are now. . . . Visual education—the imparting of exact information through the motion picture camera—will be a matter of course in all our schools.

A man of Edison's fame must have hastened the day of final acceptance by schoolmen. However, many forces[8] contributed to the development of a more favorable climate in which school jobs in the then-called Visual Education field were to open up. One condition that became increasingly clear to almost everyone was this: *Teachers needed help* from somebody in getting and using these early visual materials in the teaching process, and of course, this is the case today also. To provide this help, both formal and informal service organizations, known as "visual education departments," came into being with the head of such organizations being given the title of director or supervisor.

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[6] H. Weir, "Thomas A. Edison Goes to School," *Colliers*, Vol. 75, No. 1, January 3, 1925, pp. 14, 40.

[7] H. Weir, "What Edison Would Like to Do With the Movies," *Colliers*, Vol. 75, No. 8, February 28, 1925, pp. 20–21.

[8] The following influences leading to the use of motion pictures in the schools are easily recognizable: (1) the magic lantern influence; (2) influence of projection by pioneer teachers; (3) influence of pronouncements of motion picture inventors; (4) influence of film salesmen and distributors; (5) influence of popularizing forces such as the 9000 theatres in the year 1910 and Hale's Tours at the 1913 St. Louis Exposition, not to mention World Wars I and II; (6) influence of strictly educational-film producers; (7) influence of the commercial enterprise system; (8) influence of teacher training institutions, and state and national promotional organizations; and (9) influence of experimentation by educators and other research agencies. Many other forces, interlocked with each other, led to the development of advanced concepts regarding a broad range of instructional materials and their relationship to teaching and to communication in general.

Fortunately, information about these early departments is available. McClusky[9] in an unpublished report to the National Education Association revealed that the St. Louis Educational Museum, established in 1905, was the first administrative unit for visual education to be organized in a public school system, and that, "By 1923, sixteen city school systems had organized departments of visual education.

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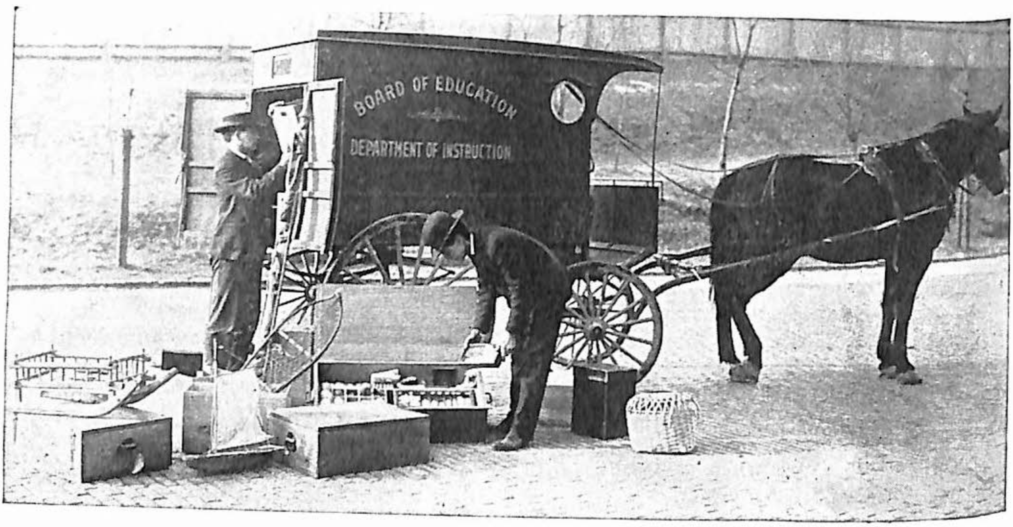
[9] F. Dean McClusky, *The Administration of Visual Education, A National Survey,* an unpublished report made to the National Education Association in 1923.

Fig. 1–1. **The St. Louis city-wide service program, the nation's first, featured the delivery of objects and models to teachers.** ***(Courtesy Division of Audio-Visual Education, St. Louis Public Schools.)***



. . ."[10] Saettler[11] in an article based on his doctoral dissertation contributed significantly to the understanding of early developments in this field. He writes:

> The organization of audio-visual education in city school systems proceeded along four distinctive paths: (a) the emergence of school museums, (b) the founding of slide libraries, (c) the establishment of film libraries, and (d) the nondepartmentalized systematization of audio-visual education . . . however these growth patterns may overlap or supplement each other, it is indisputably clear that the school museum movement gave the first vital impetus to the organization of audio-visual education in city school systems.

Saettler[12] also pointed out that, "Perhaps the most notable example of a cooperative educational undertaking of a museum is that offered by the Philadelphia Commercial Museum, which, about 1900, prepared and presented free of cost a total of 250 collections to the Pennsylvania schools."

The table of important data on the next page is also the result of Saettler's exploration of available sources. In this table a date of 1904 is given for the founding of the St. Louis School Museum, and in a previous quotation, a date of 1905 was reported. Probably the later date is the beginning of active service to schools via a horse-drawn delivery wagon. The first curator, Amelia Meissner, is reported to have worked on the organization of materials during 1904.

It is important to note that formal organizations for visual education soon expanded services to include field trips and then slides, followed by silent motion picture films. The following quotation from Saettler [13] tells the interesting Chicago slide library story:

> A second developmental stream in the organization of audio-visual education departments was the establishment of slide libraries in the cities

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[10] Quoted from a section written by F. Dean McClusky in *Audio-Visual Administration*, Fred Harcleroad and William Allen (eds.), Wm. C. Brown Company, Dubuque, Iowa, 1951, p. 7.

[11] By permission. From L. Paul Saettler, "History of A-V Education in City School Systems," *Audio-Visual Communication Review*, Vol. 3, No. 2, 1955, pp. 109–118.

[12] *Ibid.*, p. 110.

[13] *Ibid.*, p. 115.

EARLY AUDIO-VISUAL DEPARTMENTS[14]

City	*Date Established*	*Director*	*Title of Director*
St. Louis	1904	A. Meissner	Curator, Educational Museum
Reading, Pa.	1907	L.W. Mengel	Director, Reading Public Museum and Art Gallery
Cleveland	1909	W.M. Gregory	Director, Educational Museum
Philadelphia	1915	A. F. Liveright	Librarian, Pedagogical Library
Chicago	1917	Dudley C. Hays	Director, Bureau of Visual Instruction
Newark	1918	A.S. Balcom	Ass't Supt. of Schools in Charge of Visual Instruction
Detroit	1919	B.A. Barnes*	Supervisor of Visual Instruction
Detroit	1919	Julia Gilmore†	Curator, Children's Museum
Kansas City	1919	Rupert Peters	Director, Division of Visual Instruction
Los Angeles	1920	A. Loretto Clark‡	Acting Director, Visual Education
New York	1920	E.L. Crandall	Director of Public Lectures and Visual Instruction
Atlanta	1922	E.R. Enlow	Supervisor of Visual Education
Pittsburgh	1922	John A. Hollinger	Director of Department of Visual Education and Nature Study
Berkeley	1922	Anna V. Dorris	Director of Visual Instruction
Sacramento	1922	(unknown)	Director of Visual Instruction
Buffalo	1923	Orrin L. Pease	Supervisor of Visual Instruction
Buffalo	1920	Carlos Cummings§	Director of Visual Instruction
Oakland	1923	H.O. Welty‖	Director, Department of Visual Instruction

* Appointed for 1923–24.

† Children's Museum under general direction of the Supervisor of Visual Instruction.

‡ Organized as a separate department in 1923.

§ Buffalo Society of Natural Sciences, Department of Visual Instruction, subsidized in part by city for service to public schools.

‖ Chairman of committee that organized department in September, 1923.

SOURCE: F. Dean McClusky, *The Administration of Visual Education, A National Survey*, 1923, p. 11.

of Philadelphia, Detroit, and Chicago. Undoubtedly, the most intriguing historical narrative of an individual slide library is the Chicago story.

In 1895 a group of 10 enthusiastic principals in the Chicago schools organized a projection club entirely independent of the Chicago Board of

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[14] *Ibid.*, p. 111.

Education. This group of principals, with their own funds, contributed $25 each to a "slide fund" which was used to purchase slides and projection equipment. As a consequence, this small group of educators not only distributed slide sets among their respective schools and the community, but they also purchased additional slide sets and kept their collection in good repair.

The Chicago Projection Club eventually gained such wide appeal that it began to assume proportions which made it impossible for this group of volunteers to operate it effectively. Therefore, in 1917, the complete collection of some 8000 slides was given to the Chicago Board of Education with the proviso that it be built up, its use fostered, and its advantages extended to all the schools in the system. The Board accepted this responsibility and began to administer it as part of an organized audio-visual department.

By 1946 the Research Division of the National Education Association[15] was able to report that for the school year 1945–46:

> . . . More than three-fourths of the cities over 100,000 in population have created special agencies of some type to take general oversight of audio-visual instruction. More than a third of the cities, 30,000 to 100,000 also have special audio-visual centers. For smaller cities the percents drop rapidly to 5 percent for cities below 25,000 in population . . . for cities of all sizes, the school systems without special audio-visual departments are, by and large, the ones making minimum use of audio-visual materials.

This same report[16] reveals that there were as of that date a total of 164 directors. In a later survey report[17] by the same agency for the school year 1953–1954, the following summary should be noted as a general trend, "On the single item of departmental status, figures for 1946 are available for comparison . . . the percent of districts with formal departments increased from 16 in 1946 to 27 in 1954." In connection with this report[18] it is important to note also that, "Fifty-one percent of the 1310 school districts replying to the question reported central coordination of the program but no formal departmentalization." This last group of communities seems to present a great potential for growth during the next few years.

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[15] National Education Association, "Audio-Visual Education in City School Systems," *Research Bulletin,* Vol. 24, No. 4, December, 1946, p. 136.

[16] *Ibid.*, p. 137.

[17] National Education Association, "Audio-Visual Education in Urban School Districts, 1953–54," *Research Bulletin,* Vol. 33, No. 3, October, 1955, p. 94.

[18] *Ibid.*

Around the turn of the century, however, technological developments were being made that were greatly to increase the need in education for the audio-visual specialist. In a rush of invention came Edison's phonograph, Marconi's "wireless," then radio broadcasting, magnetic wire and tape recording, television, FM radio, stereophonic sound, multiple sound tracks for films, video tape, and automatic devices. This electronic revolution has indeed placed in the hands of educators a new kit of tools that cannot be ignored for long.

Including then the present observable march of electronics, the present interest in and emphasis upon audio-visual and instructional materials centers in colleges and universities around the country, and the present status of organized audio-visual programs in industry and in churches, we see that the job of the audio-visual director appears to be growing steadily in importance and complexity.

The Director's Ultimate Purpose. In providing a view of the director's job as it now opens up at various levels of instruction, it is important to differentiate between its "close-up" and "long-shot" aspects. Without this understanding on the part of the director, an intelligent balance of his many efforts seems unlikely. It is certain that he will be continually besieged by the pressure of everyday problems relating to plans, budgets, materials, equipment facilities, and routine management. This is the "close-up" aspect. The "long-shot" aspect, the improvement of instruction, is the director's ultimate purpose. With this ultimate purpose in mind it seems likely that the director will be motivated to devote a reasonable share of his energy to creative in-service work with his colleagues and to the work of critically analyzing and evaluating his action.

A View of the Director's Duties. Any statement of duties needs to be considered in the light of a special set of circumstances under which a given director must work. Specific assignments and the emphasis placed upon them will necessarily vary. A large number of listings occur in the literature, and a few of these are quoted to assist the present or prospective director in laying out his own plans for action. Great similarity in the listings is to be noted, since there is marked agreement among specialists as to their general functions. Experience shows, however, that agreement is not evident (and this is to be expected) on the means used to accomplish the ends, and on the degree to which emphasis is given to the various duties listed.

In the questionnaire used in the 1953–54 survey conducted by the National Education Association, school district respondents were called upon to check the types of services provided for audio-visual education. This part of the survey report therefore offers a list of duties, which at least one of the responding school districts with formal departments checked off as being already provided. The following list of duties is excerpted from tabulated data presented in the research report:[19]

Obtaining free and rental materials for teachers upon request
Consulting with individual classroom teachers on use of A-V materials
Keeping classroom teachers informed of available materials and new acquisitions
Selecting and purchasing A-V materials
Providing operators and equipment for school use
Keeping equipment and materials in repair
Classifying and storing materials
Training operators of A-V equipment
Selecting and purchasing A-V equipment
Arranging previews on A-V materials
Assisting curriculum committees on appropriate A-V materials for instruction
Providing delivery and pickup service to schools
Providing operators and equipment for community use
Assisting in workshops for classroom teachers in demonstrating how to use A-V materials and equipment
Helping classroom teachers and students with the production of simple teaching materials
Photographing significant school activities
Assisting classroom teachers in planning field trips
Producing A-V materials for the classroom
Assisting in producing radio programs (commercial stations)
Assisting in producing TV programs (commercial stations)
Directing school-operated radio station
Directing school-operated TV station

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[19] *Ibid.*, p. 100.

Others:
Assistance in planning and equipping school buildings for A-V use
Research work
Training of building coordinators
A-V public relations work

In addition to developing a lengthy analysis of the functions of an audio-visual department, Noel[20] stated the following generalized duties:

> . . . the director and his professional assistants . . . should be responsible for or share leadership in the following areas:
>
> 1. Evaluation and selection of materials and equipment
> 2. Supervision of all aspects of utilization within the schools
> 3. Consultation services to teachers, principals, supervisors, audio-visual co-ordinators, architects, and outside agencies on problems and activities in audio-visual education
> 4. In-service education programs for school personnel
> 5. Experimentation and research on evaluation, uses of materials, and needs for future production
> 6. Interpretation of the school's program, including audio-visual education, to the school personnel and to the public
> 7. Production of special curriculum materials.

Another helpful analysis of duties for directors of instructional materials centers was developed by members of the Oregon Audio-Visual Association.[21] This listing, which follows, is classified according to administrative, supervisory, advisory, and technical.

1. *Administrative*
    a. Organize and maintain a central "Instructional Materials Center," serving all the schools within the district
    b. Supervise the organization and operation of the materials program within the separate schools

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[20] By permission. From Francis W. Noel, "Principles of Administering Audio-Visual Programs," *Audio-Visual Materials of Instruction*, 48th Yearbook of the National Society for the Study of Education, Part I, University of Chicago Press, Chicago, Illinois, 1949, p. 194.

[21] Oregon Audio-Visual Association, *Recommended Minimum Standards for Instructional Materials Programs in Oregon Public Schools*; prepared by members of the Oregon Audio-Visual Association, May, 1952, pp. 2–3. (Mimeographed.)

   c. Administer this program, with the assistance of the coordinators
   d. Determine the equipment and materials needs of the schools and determine what it will cost to fill these needs
   e. Keep reports and records of materials, equipment, and their use
   f. Select and purchase new materials, with the help of teacher committees
   g. Select and purchase new equipment, with teacher and technical assistance
   h. Organize and administer an efficient circulation service
   i. Promote public relations leading to an understanding of and support of the program
   j. Make reports to the school administration concerning the operation and the needs of the program

2. *Supervisory*
   a. Supervise, through the coordinators, the operation of the program in the individual school
   b. Plan and carry on an in-service teacher training program through:
      (1) Conferences
      (2) Staff meetings
      (3) Noncredit classes and training sessions
      (4) Extension (credit) classes
      (5) Demonstrations, previews, auditions
      (6) Inter- and intra-school visitations
   c. Confer with teachers regarding utilization of materials
   d. Visit classrooms
   e. Issue bulletins giving information on availability and use of materials and equipment
   f. Organize and make available a handbook giving information on the "Community Resources" available for educational use
   g. Train teachers to produce certain teaching aids
3. *Advisory*
   a. Confer with administrators in the planning of new buildings and the remodeling of old structures
   b. Assist in curriculum planning
   c. Advise administrators, supervisors, and curriculum specialists in the selection and use of equipment and materials for their work

4. *Technical*
    a. Organize and maintain a library of materials (books, records, pictures, motion pictures, filmstrips, slides, exhibit materials, etc.)
    b. Repair and maintain equipment and materials
    c. Produce or supervise production of certain materials (slides, exhibits, recordings, photographs, motion pictures, radio programs, etc.)
    d. Train teachers and students in the operation of equipment.

Principles for Organizing Strong Service Programs. A view of representative though generalized listings of the director's duties should focus on the broad working principles upon which the duties and decisions connected with them are based, for it is only on the basis of sound theory that sound decisions can be made. At the risk of oversimplification the author states his version of what he believes to be sound working principles for setting up an effective service program. They are as follows:

1. *The best guarantees of success for the audio-visual service program is the placing of full responsibility for its operation upon a qualified leader who will work on a coordinate basis with other curriculum personnel and the provision of the necessary financial support for auxiliary staff, equipment, materials and facilities.* This principle demands that school system officials commit themselves publicly to a plan for positive action.

2. *Audio-visual materials should be easily accessible to teachers at the time they are needed.* This principle demands that generous help be available to teachers in selecting materials from local as well as sources outside the school system; that catalogs and subject or unit-correlated lists of materials be made up for teacher use; that simple convenient systems for ordering, delivery, and pickup be devised; and that materials used frequently by a number of teachers be purchased and made a part of an expanding audio-visual service center library. This principle also demands that teachers be able to select their own materials; hence, help must be given in facilitating pre-use or prepurchase examination.

3. *Audio-visual equipment should be made available to teachers with a minimum of inconvenience and distraction.* This principle

demands that each school building be equipped with necessary audio-visual equipment units to meet the needs of curriculum; that eventually all classrooms be provided with necessary light-control systems and suitably located electrical outlets for picture-projection systems. This principle seems also to demand that sources of assistance for equipment ordering, handling, and use be located as close as is feasible to the teacher.

4. *The audio-visual service program should include a variety of materials for teachers.* This principle demands that many kinds of instructional materials be made available to teachers, including materials for production, maps and globes, library books and textbooks, whenever administratively feasible; that assistance be given in coordinating school-community relationships of all kinds, thus making possible field trips, resource persons, interviews, a library of community documents, and cooperation between schools and local radio and television stations.

5. *The audio-visual service program should provide for the continuous, effective in-service growth of teachers in accordance with their needs.* This principle demands that teachers be given ample opportunity to develop competence in the use of a wide variety of teaching tools; that participation of teachers in planning for their significant growth-building activities be sought. This implies creative supervision—the work of friendly, understanding, capable, democratic leadership. Such a program has tremendous implications on many fronts for the betterment of the teaching staff, in addition to the up-grading of specific competencies with audio-visual materials.

6. *Provisions for city-wide audio-visual services need to be based upon continuous long-term planning.* This principle demands that any plan of action must be conceived as a long-term project; that continuing financial support must be provided to meet curriculum needs; that the process of providing building facilities must be carried on as part of a master plan for all the schools. This principle applies to the in-service growth of teachers as well.

The broad principles for setting up the audio-visual service program just described may, if known by superintendents in time, lead to a better basis for thinking and action that will condition the success of a new venture or bolster a presently sagging program.

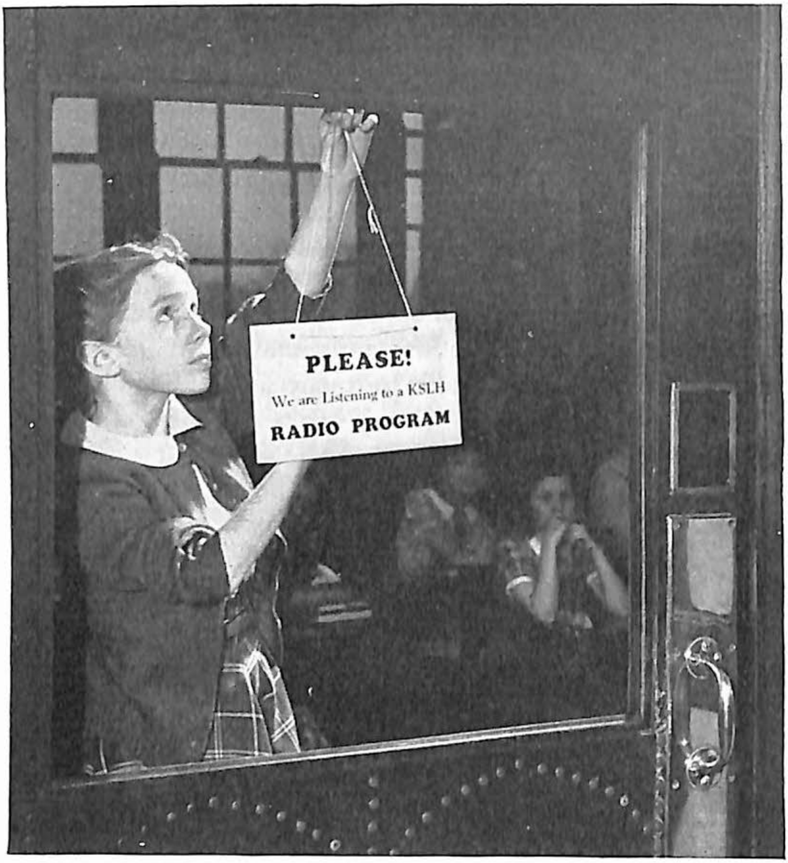
PLEASE!
We are Listening to a KSLH
RADIO PROGRAM

Fig. 1–2.* The St. Louis Audio-Visual Education Division inaugurated a comprehensive school-broadcast service over its own station KSLH-FM in 1950. In-school use of educational television programs is also made by cooperation of KETC-ETV. *(Courtesy Division of Audio-Visual Education, St. Louis Public Schools.)

The Director Needs a Strong Basis for Action. The author discovered long ago that many audio-visual service programs were set up in a somewhat haphazard fashion, growing into being without benefit of adequate operational planning and without solid legislative support. A far healthier condition would exist in many school systems if the audio-visual services were operated according to a well-formulated, written, administrative plan voted into action by Boards of

Education. An example of such a plan is the following, which is in generalized form ready for modification and application to a specific locality:

OPERATIONAL PLAN
FOR
AUDIO-VISUAL SERVICES

____
(School Department)

____
(Date)

I. Establishment of Organized Audio-Visual Services

A. To facilitate the economical use of a variety of instructional materials and equipment by teachers who are seeking to provide significant learning experiences for their pupils, the superintendent shall establish an organized audio-visual service program for the schools of ____________________.

B. The necessary services to principals, teachers, and pupils shall be made available through a centralized agency to be known as the *Audio-Visual Center.*

II. Leadership for the Audio-Visual Services

A. The superintendent shall be responsible for staffing the audio-visual center with a full-time director, subject to the approval of the Board of Education, who is qualified to direct and supervise this city-wide service at all levels of instruction.

B. The full title of the director shall be "Director of Audio-Visual Education." The salary range for this position shall be __________ ____________________.

III. Duties of the Director of Audio-Visual Education

The superintendent, or the assistant superintendent, in charge of instruction shall be responsible for the supervision of the director. The director's major duties shall be as follows:

A. With the advice of those who are concerned, formulate over-all policies for city-wide audio-visual services

B. Formulate and carry through long-term plans for the acquisition of equipment, materials, and facilities necessary to satisfy educational needs

C. Formulate and carry through adequate plans and procedures to assist teachers in the selection of appropriate materials and the convenient operation of equipment
D. Organize and conduct an adequate in-service education program for teachers and principals
E. Establish and maintain cooperative consultive relationships with supervisors, principals, and all curriculum committees
F. Make detailed budgetary recommendations to the superintendent of schools in terms of detailed long-term needs
G. Establish and maintain an adequate public relations program
H. Evaluate continuously the results of the service

IV. FINANCIAL SUPPORT

A. Expenditures for audio-visual services shall be considered an integral part of the over-all instructional program.
B. The superintendent shall be responsible for the preparation of detailed plans for expenditures in terms of well-defined needs and goals
C. The Board of Education, in recognizing its obligation to meet the costs of an audio-visual service program, should recommend the following financial support:
(1) A first year financial outlay amounting to $__________ per pupil to bring __________________ (school department) audio-visual facilities up to a "desirable minimum" operating basis
(2) A minimum average annual expenditure for a ten-year period amounting to $__________ per pupil.

Such a basis for action gives a new director a great potential for success, but how a program is launched may also be an important factor in long-range success.

The Director Launches His Career. The newly appointed director of the audio-visual service program may report for his or her first day as a stranger, or as is frequently the case, he may already have been a well-known and respected local staff member. He may, of course, begin to operate according to an Administrative Operational Plan that represents careful cooperative effort of a local study committee. He may be fortunate enough to have immediate access to a local school-system survey of equipment, classroom facilities, professional status of teachers, and well-worked-out catalog and distribution procedures. He may even find an advisory council and a school building coordinators group waiting for a first bulletin or the resumption of a series of meetings. He may even walk into a well-equipped audio-visual center with secretarial and technical staff at work on routine business. He may even be called upon during the first hour on his new job to collect evidence and make a decision about printing, production, or projectors. He just may have to start from scratch. Is there a safe and sure formula? The answer must be "no."

It is no simple matter to start out on any new job, let alone one that cuts across the entire range of instruction. The primary purpose of this book is to contribute to the preparation of the prospective director for just such a task. To be able to define problems in this field and to discover sound solutions for them in terms of a unique environment is the kind of performance this book will emphasize. However, as to initiating a program, the following good advice merits careful consideration:

1. Find out what positive and negative influences are at work.
2. Be friendly, sincere, modest, objective, and industrious.
3. Get the facts about school materials, equipment, and facilities at once.
4. Make personal commitments only for services that can be met on time.
5. Enlist the cooperation of colleagues to get the work of the organization done.
6. Give attention to the proper pacing of activities and work loads.
7. Define problems and assign priorities for solution.
8. Get to know colleagues at all levels.
9. Make an *operational plan* for the superintendent if one doesn't already exist.
10. Identify some impartial, nearby sources of advice.

Such a list could stretch out interminably but without value at this point. The student should turn, however, to the next chapter for an analysis of some underlying attitudes, commitments, and abilities that, if possessed by the director of audio-visual services, should increase his potential for competent performance. This analysis naturally has to be highly selective, and it is intended that the student will undertake the job of self-scrutiny and, under proper guidance, his own development in terms of personal needs.

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SUGGESTED ACTIVITIES

1. Explore several references that tell the story of early use of audio-visual materials in this country. State a few major forces that contributed to the growth of the A-V movement.

2. List a few of the earliest city-wide systems of audio-visual education with their inauguration dates. Give a few details relative to the city in your own state that was first with a city-wide system.

3. Do you believe that the general public is more or less ready than ever before to support an audio-visual service program? Why?

* 4. State in a carefully prepared listing the major duties of a director of audio-visual education. State also the broad functions under which these duties may be classified. Start this list now, add to it day by day, and revise it throughout the course. List also the best references regarding this analysis for future use.

* 5. State carefully the six basic principles for organizing and developing a program of audio-visual services, then show that they *are* or *are not* being applied in your own school system.

6. Re-examine the statement in this chapter regarding the director's *executive* role; then express and evaluate your own opinion as to the director's duty to execute policy democratically, once it has been formulated. What specifically is the director's responsibility for implementing policy in a democracy?

SUGGESTED READINGS

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CHAPTER TWO

ESSENTIALS FOR EXPERT PERFORMANCE

WHAT are the differences between a highly competent audio-visual director and one who is of only mediocre caliber? Why do some people perform with outstanding effectiveness, seeming almost always to make correct decisions even in complex situations? Why do some individuals seem to be able to ask the right questions at the right time in their respective fields? Why can some be so confident in their own powers for action while others feel so unsure of the outcomes of their efforts?

Such questions are raised to focus attention of the student upon those basic, dependable principles and insights, *the common sense* that as a part of his own personal complex of capacities, drives, and environment will guide him in the day-to-day problem-solving process toward effective service. Fortunate indeed is that director of audio-visual services who brings a democratic conscience to the meeting room where policy is formulated and crucial decisions arrived at, who brings a sturdy desire to seek the facts together with an attitude of criticalness, who brings the power to channel his energy toward well marked out objectives, and who brings to his everyday work the love of learning. But most fortunate of all is that director who brings to his job and his community a penetrating insight into the processes of teaching and learning, who brings a broad understanding of the roles that audio-visual materials play in helping teachers, and who brings understanding of and the ability to apply a system of principles in guiding his thinking about the utilization of the materials he will seek to provide. These, the author asserts, are empowering essentials that when functioning properly will facilitate outstanding performance. These, and of course many others that will have to be left for the student's present and future identification, are the essentials that will activate audio-visual technological knowledge and skill along speedy, efficient lines of influence into the classroom.

These essentials for expert performance must be the subjects for exhaustive study as the prospective director plans his program of preparation, and certainly they should be the targets for self-improvement on the part of practitioners. A full treatment of these and other important personal attributes is beyond the scope of this book, however. Each of the selected essentials will be dealt with in subsequent pages, with major emphasis being given to those that are directly related to the teaching process.

A DEMOCRATIC CONSCIENCE IS AN ESSENTIAL

In a memorable book for school administrators Mort[1] undertook the formulation of a basic set of principles expressing the common sense of the culture. He pointed out that:

> Attitudes toward educational policy are influenced by considerations that are a heritage of the culture. . . . Some of these considerations are humanitarian. The public are concerned not only with ends to be achieved, but with democratic, just and egalitarian treatment of persons affected by the process of achieving them. . . . Other considerations are prudential: The public are concerned that the ends be achieved without outraging the sense of the practical that they have built up in their business relationships, at work, or in the operation of their homes. They are concerned with economy: they believe that the really important

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[1] By permission. From Paul R. Mort, *Principles of School Administration*, McGraw-Hill Book Company, Inc., New York, 1946, pp. 2–3.

> things are simple; they are suspicious of cleverness; they want schools to achieve their ends in ways that appeal to their sense of the practical, of the common sense . . . closely related are the three principles . . . of change: adaptability, flexibility, and stability.

According to Mort,[2] the humanitarian considerations include the principles of democracy and equality of opportunity. He says that in seeking to avoid bad public reaction and to help him achieve the best the culture expects, the administrator should remind himself of the following, "When I set any operation into play to achieve an objective, I involve action of human beings: teachers, other staff members, pupils, parents, citizens in general. I require them to change their behavior. I affect their lives."

Briefly then, by what principle does our culture expect that administrators will be guided? Mort[3] states it this way, "Democracy demands that each human being be dealt with by his fellows as a living, growing, potentially flowering organism that has a right to be a participant in decisions that stand to affect him."

Such a principle is the only reference point for the building of a democratic conscience, which Burton and Brueckner[4] define as follows: ". . . a firm belief in the principles of democracy, a sincere and persistent attitude of desiring to conduct oneself democratically, and an unshakable faith in the ability of human beings to achieve the difficult levels of democratic life."

It is this well-developed, personal sensitivity to this aspect of human relations that is essential for outstanding performance. Without a democratic conscience the director of audio-visual services is bound to impede his own progress, not only in small matters handled within the confines of his own operating staff but in matters of broader scope involving fellow administrators, teaching staff, parents, and citizens.

FOCUSING ON FACTS IS AN ESSENTIAL

Throughout this book as aspect after aspect comes under analysis, the point of view advanced is that the director needs to make unique decisions. When the director makes a recommendation, when he has opposition and is challenged, when he sets out to solve a problem, there is no better plan of action than the one that is backed up by the facts. Facts, not intuition, fancy, whim, or guesswork, if the director will but realize it, are the starting points for successful action. But the mobilization of information is an ability that is all too rare. The director needs to work at it diligently. If he possesses the priceless attribute of willingness to inquire with an open mind, he will have the best chance to influence people who have closed theirs despite what they say.

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[2] *Ibid.*, p. 94.

[3] *Ibid.*, p. 99.

[4] William H. Burton, and Leo J. Brueckner, *Supervision a Social Process*, 3rd ed., Appleton-Century-Crofts, Inc., New York, © 1955, p. 76.

Today as never before the director has a body of literature, a number of organized research agencies, and professional organizations at local, state, and national levels, all of which are sources of facts for his own situation. He must have facts about professional workers and laymen, facts on the history of school operations and what key principals and supervisors have tried to accomplish, and facts about what is going on in every school plant falling within his sphere of operations. The ability to mobilize information for action is a fulcrum upon which success and failure may well turn.

ATTITUDE OF CRITICALNESS IS AN ESSENTIAL

Not everyone is right, and not everyone is competent. Some materials and equipment are poor and some are good. There are high standards and low standards for conduct and achievement. If the director has the tendency to put on rose-colored glasses whenever he is called upon to make a judgment, evaluate a situation, or formulate an objective, he will be ineffective indeed. He needs to be critical of what he hears, what he is told, what he sees, and what he reads. The critical approach here recommended does not imply meanness, unfriendliness, impatience, the lack of sensitivity to feelings of others, vocal criticism or letters of censure, brashness or rudeness. On the other hand, it does imply power to discriminate, accuracy in observation, skill in judgment, and a willingness to recognize weakness in himself as well as in others. The director will certainly enhance his powers of appraisal and diagnosis and his over-all usefulness if he develops such an attitude of criticalness.

DEFINING PROBLEMS AND GOALS IS AN ESSENTIAL

It is doubtless true that there will never be enough time or staff in any one locality to carry out adequately all the proposed duties of a director of audio-visual services. In fact the selection of targets for energy and action in terms of outstanding needs is a very significant problem in itself. It is urgent, therefore, in the economy of time and effort to define specific local problems and to mark out as clearly as possible the goals that are to be achieved. It isn't sufficient to make a listing of general duties. The director must define in terms of his own situation what level of competence in teachers he will seek to develop and how comprehensive his program of service must be, and then plan for a five- or ten-year effort. A list of conditions won't suffice. The director will also have to set his foot into every classroom, or organize others to do it, to map out a facilities and equipment program, and then set up a long-range plan to achieve it.

The director's attitude of criticalness and his desire to mobilize the facts go hand in hand with his drive to define problems and set up objectives, and of course not the least of his problems will be to get his colleagues to set up their own objectives for improved action in the area of his concern. Evidence may lead to the definition of a need, and then how to meet it becomes the problem, and this of course may call for another set of data. It is the purpose of this book to open up clusters of problems likely to confront the school system audio-visual specialist and to point out fruitful lines of attack on these problems, but it will be the degree to which the director can identify his local problems in terms of clear-cut needs and the degree to which he can set up his own purposes for action that will determine his effectiveness.

THE SELF-TEACHING OF NEW SKILLS IS AN ESSENTIAL

Most individuals have reserves of energy, stamina, and creative capacity that have never been tapped. These reserves of power have been called forth in thousands of individuals by the free enterprise system of America in a gigantic how-to-do-it sales campaign. From making a Polaroid camera transparency to building your own home seems for some to be but a short step.

In the audio-visual service business the need for a love of learning new skills becomes an essential for success. However, instruction sheets, diagrams, and complete kits make this a game. Out of a weekend of leisure time, a few supplies, some simple equipment, some careful reading, some trial and error responses, for example, may come a director's first diazochrome transparencies for a meeting two months away, a script for a film, a scale drawing of a new audio-visual center, or a new handbook for bulletin board display.

Outstanding performance by directors of audio-visual education demands the self-teaching of new skills, and a love of learning will make this process both enjoyable and successful. It will take courage, effort, and stamina, but fortunately these are in our heritage. Furthermore, if he doesn't know it already, the director should learn that not all the needed professional skills have to be acquired in formal courses for university credit. The director will quite naturally identify needed operational skills as problems arise in his day-to-day work, and instead of delaying action until the right course may be found, he should try to locate appropriate reference material and direction sheets, obtain needed equipment, and then engage in some serious study and practice. To speed up the process, he should obtain the usually available help from friends, specialists, tradesmen, manufacturers, salesmen, and other hobbyists.

With this brief treatment of several desirable personal attributes, the writer turns to the remaining essentials for expert performance, which because of their pervasive and complex nature and their implications for action must be analyzed more carefully. The following extensive discussion, though all too limited, suggests that the performance of the audio-visual specialist will more likely be of outstanding caliber if his thinking is guided by (1) a correct view of teaching and learning, (2) an understanding of the roles audio-visual materials play, and by (3) a well-developed system of basic utilization principles.

A CORRECT VIEW OF TEACHING AND LEARNING IS AN ESSENTIAL

Wherever there is loose thinking, real progress is impeded. Every man's opinion about education is not as good as the next. A great deal is known today about teaching and learning, yet many educators remain confused. The director of audio-visual services must avoid such confusion through a systematic effort to develop a set of working principles, a set of policies for action. He ought to arrive at valid definitions and ought to decide on a current framework of reference. Without such convictions he will be buffeted and tossed about by the whims and fancies of others. This so-called *conviction*, however, ought always to be open to revision as new evidence is obtained or new insights are developed through professional growth.

The alert audio-visual specialist will usually find himself in the midst of a wide variety of opportunities for learning from the most talented teachers, supervisors, and leaders in his situation, but he must seek to strengthen his own theoretical outlook by constant study. The director should not be "taken in" by colleagues who denounce theory in favor of practice, for if he is to be a practical man, he must be a master of theory.

A correct view of teaching and learning must not be divorced from the director's primary relationship to instructional processes; namely, that of facilitating and guiding the use of audio-visual materials by teachers. In meeting this obligation, he ought not only to view the teaching process from the focal point of *how* it is done. He needs also to keep in sharp focus the broader view of *what* is being selected for teaching. The director must therefore realize that he is, or ought to prepare himself to be, a valuable member of the curriculum improvement team on the one hand, and on the other, a capable implementor, facilitator, and helper in day-to-day classroom processes. In exerting effort to develop valid points of view for making good decisions, it doubtless will be helpful to the director to consider the following discussions: (1) curriculum designs and the use of audio-visual materials, (2) basic principles of teaching and learning, and (3) effective implementation.

Curriculum Designs and the Use of Audio-Visual Materials. The director needs to be familiar with fundamental curriculum designs that have been proposed in terms of changing cultural values, and he should be aware of the fact that the curriculum in any given school community is likely to be a unique mixture of such designs with audio-visual and other instructional materials making a variety of contributions. In a simple classification with sharp distinctions, Stratemeyer, Forkner, McKim, and Passow[5] identify the following four major types of design according to the way in which facts, generalizations, and skills are organized for teaching:

> First is the organization by *separate subjects*. . . . Second is the organization by *subject fields* or *groups of related subjects*—history and geography as social studies. . . . Third, and in contrast to the two preceding bases of curriculum design, are the patterns where scope and sequence are still designated from grade to grade but in terms of *broad areas that cut across subject fields*. In some designs these are areas of living or major social functions, so organized as to include every major aspect of life . . . communication, development and conservation of human and material resources. . . . Fourth are the designs in which choice of subject matter for any pupil group, how it is organized, and how it flows in sequence from grade to grade emerge from the *needs or problems faced by the group*, broadly interpreted. This organization is distinct from the other three in that neither scope, organization nor sequence is specifically outlined and preplanned grade by grade.

Inspection will show that curriculum designs, as they are presently operating in schools, are similar in some respects and widely different in others, but all need appropriate instructional materials, the best possible teachers, and as this volume suggests, capable leadership and financial support for audio-visual methods if they are to be effectively implemented. Each locally adopted curriculum pattern will be certain to emphasize characteristic values. The group of curriculum experts[6] just quoted supports the view that the needs and purposes of learners must be central. They indicate desirable values when they say:

> These everyday concerns of learners are the sources of situations which have meaning for them in the light of their maturity and experience and which provide strong motivation for learning. Expressed or unexpressed, these immediate problems, concerns, and interests need to be the starting points around which classroom experiences are developed. This is a concept of the curriculum which . . .

[5] By permission. From Florence B. Stratemeyer, Hamden L. Forkner, Margaret G. McKim, and A. Harry Passow, *Developing a Curriculum for Modern Living*, 2nd ed. Revised, Bureau of Publications, Teachers College, Columbia University, New York, 1957, p. 87.

[6] *Ibid.*, pp. 114–115.

recognizes the worth of each individual and allows for his uniqueness in needs, concerns, talents, interests.
helps the learner face the world at his level of understanding.
recognizes the nature of his growth and utilizes the meanings experiences have for him.
values the learner's daily living at any stage of his development as important to the society of which he is a member
relates his in-school and out-of-school experiences.

The way in which facts, generalizations, and skills are organized for teaching, and the emphasis upon particular values, have a definite bearing on the way audio-visual materials are selected and put to work. However, as has been previously pointed out, regardless of the curriculum design prevalent in any given community, audio-visual materials will make significant contributions to learning and teaching. In the most traditional subject-type curricula, good teachers will feel the need for a wide range of audio-visual materials to present clear explanations and to develop readiness in pupils for new subject matter areas by defining issues and developing interest in prescribed activities. Audio-visual materials will also assist in presenting practical applications of content to everyday situations, as well as aiding in evaluation, diagnostic, and remedial work. To be sure, selection will be by the teacher, and emphasis may in some cases be upon memorization. As curriculum patterns move away from subject designs to the psychological organization of learning activity, audio-visual materials are used in relation to the purposes of pupils—that is, used in helping to solve problems that they themselves have defined, selected, and cooperatively planned. In this framework of reference pupil concerns will determine both the nature and the quantity of materials needed. Certainly the teacher will be the guide in suggesting helpful items and will have to locate valid materials as needs for them become obvious or are anticipated. Also, in these cases where preplanning for the year cannot be done, scheduling of materials long in advance, as is common in cases where sequential units of work are taught repeatedly, cannot be practiced. It is readily seen that under such curriculum designs, materials that are produced to serve in the capacity of realistic vicarious experiences, or are produced on topics that deal with pupils' life situations, will be of special significance.

This statement of suggested ways in which audio-visual materials will facilitate learning under the various curriculum patterns is not intended to be complete, since as has been pointed out, a broad understanding of the roles they play is an essential for expert performance and hence will be given a separate treatment later in the chapter. Guidance for the development of a correct view of teaching and learning now turns from curriculum design to a discussion of basic educational principles.

Basic Principles of Teaching and Learning. The following discussion is included, as in the previous section, in order to assist the director to establish a framework of reference for thinking about the use of audio-visual materials. In the preceding section attention was focused on the selection of content and its organization, but in this topic emphasis will primarily be on the *how* of teaching in accordance with established general principles. The director who understands these principles will be more likely to arrive at sound day-to-day decisions. He will have as his orientation for action the most dependable professional learning about how to teach. The reader is urged therefore to undertake a careful scrutiny of the several statements of principles selected from the literature and to seek a penetrating understanding of them in the light of current classroom practices. To that end some brief suggestions will be made following each quotation as to the implications for the use of audio-visual materials.

The *first statement* is a comprehensive one and is in three parts. This statement is quoted from the first edition of what the writer refers to as an educational best seller now in its revised edition. Burton's[7] noteworthy summary is as follows:

> . . . The salient characteristics and principles of learning and teaching . . . are brought together for the sake of clarity and ready reference. The summary is not final but subject to revision by students as new research findings appear.

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[7] By permission of Appleton-Century-Crofts, Inc. From Wm. H. Burton, *The Guidance of Learning Activities*, 1st ed., Appleton-Century Co., Inc., New York, 1944, pp. 212–214. (Students should refer also to the second edition, 1952, for an excellent sample of a teaching unit. The material quoted above has undergone a revision in arrangement which was not so useful for the author's purpose; hence the first edition material was used here.)

THE CHARACTERISTICS OF A LEARNING ORGANISM

1. *The learner is a behaving organism.* Activity is primary and continuous.

2. *The learner is a goal-seeking organism.* Activity is directed toward and controlled by purposes. The remote general purpose is to restore and maintain equilibrium and comfort.

3. *The learner reacts to whole situations or total patterns* and not to isolated or abstracted parts thereof. . . .

4. *The learner reacts as a whole.* He reacts all over, intellectual, emotional, and physical reactions being simultaneous.

5. *The learner reacts in a unified way.* Unless interference occurs, his total reaction, intellectual, emotional, physical, is coordinated and integrated toward achievement of purpose.

THE CHARACTERISTICS OF LEARNING PROCESSES AND PRODUCTS

General Definition. Learning is the process of acquiring useful controls of response through experiencing them.

1. *The learning process is experiencing, reacting, doing, undergoing.* Scores of different learning activities are utilized.

2. *The learning products are responses and controls of response,* values, understandings, attitudes, appreciations, special abilities, skills.

3. *The learning process proceeds best when the numerous and varied activities are unified around a central core of purpose,* when the learner's interest is in the activities and products, when the learner identifies himself with the purpose through originating or accepting it.

4. *The learning products accepted by the learner are those which satisfy a need, which are useful and meaningful.* Learning products which are extraneous to need and purpose are either rejected or learned only superficially. (Actually they are not truly learned.)

5. *The learning process proceeds and the learner grows through continuous individuation of new patterns out of original wholes* and the re-integration of the new wholes into the total personality pattern.

6. *The learning products are perfected through a series of discrete, identifiable experiences.* The number of experiences necessary for the production of a change in the learning organism will vary from one to a great number, depending upon: the type of learning, the adjustment between difficulty of learning and maturity of the learner, the relativity of

the learning situation to the life of the learner, the speed with which insight develops, and many other factors.

7. *The process of organization implied in (5) and (6) may be slow and gradual, or relatively rapid, or sudden.* Good learning situations will stimulate continuous changes in the pattern or response toward an even better organization. The better organized into systems the learning experiences are, the less likely they will be forgotten. Isolated and fragmentary items are soon forgotten.

8. *The learning products, when properly acquired, are complex and adaptable, not simple and static.* They are transposable from situation to situation, or more simply, there is transfer of training.

9. *The learning experiences, to be of maximum value, must possess lifelikeness for the learner.* They must satisfy a current purpose, be continuous with ongoing experience, and be interactive with a wide and rich environment.

10. *The learning experience, initiated by need and purpose, is likely to be motivated continuously by its own incompleteness.* Further stimulation through subsidiary purposes suggested by the teacher may be necessary.

11. *The learning process and its products are conditioned by heredity and environment.* Hereditary factors: a plastic nervous system, glandular balance, chemical composition and secretions, the various physiological systems, organic drives, etc.

12. *The learning process and its products are affected by the level of maturity of the learner* as indicated by various measures of chronological, mental, emotional, physiological, and social age; by the nature and amount of previous experience as indicated by tests of informational background, interests, needs; by fatigue, etc.

13. *The influence of previous experience upon learning is regarded quite differently by the two major schools.* The associationists stress its importance and note the value of knowing the learner's background of experience. The principle of "apperception" is important. The field-theory group places more emphasis upon the clarity and organization of the field or pattern, upon subsequent differentiation through insight. The sensible view would seem to be that both emphases are important.

14. *The presence of many errors in a learning experience is usually though not always an indication that the experience is too difficult for the learner's level of maturity.* Better pacing is needed.

15. *The learning process and the acquisition of products are materially affected by individual differences among the learners.*

16. *The learning process proceeds best when the learner has knowl-*

edge of his status and progress. The satisfaction accruing from success, from challenge to overcome difficulties, and to rectify failure definitely aids learning. Failure imposed by others, or by arbitrary standards beyond the control of the learner, is not an educative situation.

17. *The learning process is unified functionally, but distinguishable types of learning may be separated for discussion:* perceptual, sensorimotor, memoriter, problem-solving or conceptual, affective.

18. *The learning products are interrelated functionally but may be listed separately for discussion.* Values, understandings, attitudes, appreciations, abilities, and skills are all interrelated in any one given learning product possessed by the learner.

19. *The learning process proceeds more effectively under that type of teaching which guides and stimulates without dominating or coercing.*

THE CHARACTERISTICS OF THE TEACHING PROCESS

General Definition. Teaching is the guidance of the natural activities of the learner and the stimulation of desired activities, directing them through educative experiences to the acquisition of socially desirable controls of conduct.

1. The teacher will aid pupils in defining their purposes and will set the stage for the emergence of desirable purposes.

2. The teacher will aid pupils in distinguishing between levels and types of purposes and will aid them to choose those leading to outcomes deemed desirable by our civilization.

3. The teacher will guide or direct (sometimes) pupils in planning procedures for the achievement of their purposes; that is, she will guide or direct learners into experiences possessing maximum lifelikeness, which satisfy the selected purpose, which are continuous and interactive. Direct experiences will perforce be supplemented by vicarious experiences which should be as vivid as possible.

4. The teacher will guide pupils in a sufficient number of these experiences to guarantee, as far as it ever can be guaranteed, the acquisition of desired outcomes.

5. The teacher will guide pupils into, or will provide for, numerous and diverse learning activities; that is, she will provide for responses from the whole organism.

6. The teacher will aid pupils in selecting experiences fitted to their abilities, needs, interest, and levels of maturity; that is, she will adapt learning experiences to individual differences among the learners.

7. The teacher will aid pupils in discovering how to judge their own

progress and will encourage the constant self-evaluation of status and progress.

In this first statement of characteristics and principles of learning and teaching, the list of implications for audio-visual materials is lengthy indeed; however, an entire system for putting them to work is treated later as a separate essential for expert performance on the part of the audio-visual specialist. Therefore, for the present, it will suffice to point out that this statement implies that audio-visual materials ought to be used in relation to those problems and purposes recognized, accepted, and planned by the learner; that they be a part of a process that is novel, lifelike, significant, satisfying, and leading to complex learning products; that audio-visual materials ought to be selected in terms of pupils' maturity and experience levels; that learners should be expected to react to them in different ways, contributing to accomplishment by various routes of endeavor; that the introduction and use of materials must not be characterized by coercion; and that they be used in connection with the achievement of identifiable and desirable outcomes. The reader should note also that emphasis is given in the preceding set of principles to learner experiences as the focal point for organization of content, and that the learning products are characterized by their usability in meeting other situations. The implications just stated would hardly permit the director to condone some of the unpardonable errors committed all too frequently in the name of audio-visual methods.

The *second statement* is a synthesis of learning theories as stated by McConnell[8] used here in extremely brief form. The reader is also urged to study this material as originally prepared because it has been the basis for so many practical classroom applications. The statement follows:

> (1) Both situation and response are complex and patterned phenomena [p. 256].
>
> (2) Descriptions and interpretations of learning . . . must be made in terms of the mutual relationships among events rather than in terms of

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[8] By permission. T.R. McConnell, "Reconciliation of Learning Theories," Chapter VII, Section II, "Synthesis of Learning Theories," *Psychology of Learning*, 41st Yearbook of the National Society for the Study of Education, Part II, University of Chicago Press, Chicago, Ill., 1942, pp. 256–277.

independent properties or actions of the parts [p. 258] . . . . Successful learning may be expected to breed self-confidence and self-independence.

(3) The organism must be motivated to learn [p. 262].

(4) Responses during the learning process are modified by their consequences [p. 267].

(5) Learning behavior is selective. It is directional and it is organized with respect to the attainment of some end or result or condition [p. 269]. . . . These determining tendencies are given different names, such as attitude, readiness, mental set, expectancy, or goal-set [p. 270].

(6) Learning has been described as a closer and closer approximation to successful performance [p. 273].

(7) Learning is essentially complete when the individual has clearly perceived the essential relationships in the situation and has mastered the fundamental principle involved in the concrete problem [p. 274].

(8) The transfer of learning from one situation to another is roughly proportional to the degree to which the situations are similar in structure or meaning [p. 275].

(9) Discrimination as well as generalization is an essential aspect of effective learning [p. 277].

The foregoing second statement, couched in somewhat more technical language, will be useful in interpreting the first, more comprehensive statement preceding it and in showing that diversified schools of thought are in substantial agreement regarding a number of important principles. This second statement emphasizes the importance of motivation, the complexity of learning, transfer of training, and the processes of discrimination and generalization. All kinds of audio-visual materials by implication need to be related to a direction-giving problem, a meaningful, purposeful situation. Audio-visual materials may provide content for generalization, but the reverse process needs to be brought into proper balance as well. Also it needs to be recognized that audio-visual materials ought not to be used mainly as sugar-coating for the learning "pill." They need to be tied to more profound roles in the classroom. Thus the value in audio-visual materials ought to be looked for in their relationship to events and situations rather than in the materials themselves as capsules of content.

The *third statement* of principles of teaching and learning, and the last to be used in this discussion, is quoted from one of the influential projects of the American Council on Education. This statement from Noel and Leonard[9] follows:

> . . . Teachers should understand that the principles of good teaching are based upon a knowledge of the nature of learning and of the individual and social needs of pupils. . . . Psychological principles such as the following will affect the selection and use of audio-visual teaching materials just as they should affect the selection and use of textbooks and reference materials:
>
> 1. The individuals in any class are in different stages of growth.
> 2. Each individual has his own rate of growth.
> 3. Each individual has certain basic drives.
> 4. Each individual has certain special interests.
> 5. Each individual acts as a whole and not with separate intellectual, emotional, and physical responses.
> 6. Learning must be purposeful.
> 7. Learning usually persists to the extent that it is used. A person learns what he practices.
> 8. Activities must be appropriate to the learning desired.
> 9. There is no learning without interest.
> 10. A close relationship exists between interest and readiness to learn.
> 11. There must be readiness for an experience before a pupil will be able to profit from it.
> 12. Interest in and enthusiasm for the thing to be learned will develop a favorable attitude toward what is being learned.
> 13. Difficulties in learning may be caused by many factors, some of which are outside the pupil and beyond his control. For instance, difficulties may be caused by:
>   (a) The teacher
>   (b) The materials
>   (c) The problem under discussion
>   (d) The environment
>   (e) Home conditions
>   (f) Poor health

The third statement of principles implies that desirable learning outcomes determine the kinds of activity that should accompany or follow the use of audio-visual materials. Great emphasis is given also to the need for pupil readiness to participate. Implied also is the expectancy that individuals will bring to an audio-visual experience their own drives, interests, and rates of growth, and hence each will react as a whole to the situation. Also in this connection, audio-visual materials may be too difficult or too easy. Content in them may be developed at too rapid a pace, and the environment in which they are used may need to be improved. Further, this statement seems to imply that learning from audio-visual materials may involve practice in addition to observing.

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[9] By permission. From Elizabeth Goudy Noel and J. Paul Leonard, *Foundations for Teacher Education in Audio-Visual Instruction*, American Council on Education, Washington, D.C., 1947, pp. 25–26.

The two preceding discussions dealing with curriculum designs and basic educational principles, together with the third that follows, are proposed as material for present and future study leading to the development of a correct view of teaching and learning. Such a framework of reference will facilitate clear thinking, resulting in good decisions and high-caliber performance. This last topic leads to a correct view of teaching and learning through a discussion of implementation, the basic problem of organizing for teaching and of fitting audio-visual materials into that organization.

Implementation of Audio-Visual Methods. The audio-visual specialist must prepare himself to meet the problems of helping teachers to put audio-visual methods to work to the greatest advantage under whatever curriculum design is prevalent in his locality. In the discussion of the last two main topics (namely, "Curriculum Design," and "General Principles of Teaching and Learning") is found the underlying theory for action; however, the job of organizing for teaching is pursued in a number of ways, some characterized by the unit method. The conviction is held by the writer that good unit methods are basic to discriminating, effective utilization of audio-visual materials specifically, and are basic to all good teaching in general. It is indeed a pity that teachers everywhere cannot find more time to spend on this rewarding and highly professional activity. However, while some curriculum designs demand preplanning of the organizational structure, others demand that the units be developed with the learners in any given situation. One of the first requirements for expert performance on the part of the audio-visual director is to determine as soon as possible just how best the local curriculum design can be organized for day-to-day teaching, and then to proceed to define just how the wide range of available materials can fit into this organizational structure in serving educational objectives. The second requirement for expert performance is to encourage through his own insight and practical ability the creative use of audio-visual materials by teachers in accordance with these methods. His major responsibility, of course, is for the creative, advantageous use of audio-visual methods, since other supervisory officials have responsibility for developing curriculum design and forms of desirable planning by teachers. Nevertheless the director needs to know what these techniques are and needs to be able to give good advice and counsel concerning all matters pertaining to good teaching. In discussing the implications for organization of instructon, Burton[10] emphasizes the responsibility of teachers as follows:

> The course of events in a classroom situation cannot be left to chance. A teacher, when he steps before a class to participate in and to guide learning experiences, must have some idea as to what should and is likely to occur. This is true in situations which are planned co-operatively with the children as well as those in which the teacher plans by himself. . . .

Steady improvement in book-centered teaching leads to significant assignments and pupil-teacher planning and to effective unit methods as well. Implementing designs where needs and purposes of the learner are central also calls for unit organization of the type developed with learners. In the reference just cited, Burton[11] gives the following definitions of *subject-matter* and *experience* units:

> A *subject-matter unit* is a series of educative experiences centering upon subject-matter materials which are arranged around a central core found within the subject matter itself and which are to be studied by pupils for the purpose of acquiring learning outcomes derivable from experiences with the subject matter. The core may be a generalization, a topic, or a theme.
>
> *An experience unit* is a series of educative experiences organized around a pupil problem, utilizing socially useful subject matter and ma-

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[10] By permission. From Wm. H. Burton, "Implications for Organization and Instructional Adjuncts," Chapter IX, *Learning and Instruction*, 49th Yearbook, Part I, National Society for the Study of Education, The University of Chicago Press, Chicago, Illinois, 1950, p. 217.

[11] *Ibid.*, pp. 219–220.

terials and resulting in the solution of the problem and in the acquisition of learning outcomes inherent in the experiences.

The distinction between subject-matter units and experience units is in part arbitrary. The terms are useful to the extent that, in given situations, they indicate the instructional emphasis to be upon organized subject matter or to be upon the total experience of the learner. Again we must beware of the either-or interpretation. The actual instructional organization developed by a teacher must of necessity use subject matter and also experiences.

The subject-matter unit utilizes many, in fact could not proceed at all without, pupil experiences. Reading or studying books, reciting, working examples, and listening are all experiences, even though somewhat narrow and limited. A wider range of activities will appear in subject-matter situations where policy and supplies permit and good teachers are at work. The experience unit draws heavily upon many diverse sources of subject matter. The evidence seems to show that a good experience unit is likely to use as much subject matter as a subject-matter unit, with a somewhat wider range of activities. The latter fact is, however, subject to modification both ways in terms of teacher competence.

It is obvious that when units of activity are developed with youngsters, only a part of the planning by teachers is likely to be written down in advance. It is not easy in any case to show quickly in desirable detail just how audio-visual materials are related to unit plans. It is not an easy matter either to provide a set of directions for planning units of work for all the representative curriculum designs. However, Burton[12] has provided the following valuable brief outline:

GENERAL OUTLINE FOR PLANNING AND DEVELOPING TEACHING UNITS

The unit organization cannot be reduced to an easy series or processes as was the assignment-study-recite-test process. A general outline is, nevertheless, observable.

1. Objectives are stated.
    a. The teachers' objectives are the understandings, attitudes, appreciations, general abilities, and skills which it is desired to develop in the pupils.
    b. The pupils' objectives are questions, problems, topics of interest, and purposes of the learner.
    c. The teacher will participate in developing pupil objectives.

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[12] *Ibid.*, pp. 241–243.

Guidance will be exercised in the avoidance of a large list of trivial questions. Teachers will suggest, and pupils will welcome, questions and problems for investigation which are significant and of which the learner could not know on the basis of his present knowledge.

2. An overview is given.
    a. The overview is a brief statement of the nature and scope of the unit. It may consist of (1) a description of the unit in running discourse, (2) an outline of leads in terms of topics, themes, or generalizations, or (3) an outline of leads in the form of actual or probable pupil questions, problems, or proposals.

3. An approach is developed.
    a. A probable introduction or approach is outlined. Two or three or more may be indicated. The teacher endeavors to make clear just how she proposes to get the particular teaching-learning situation under way.
    The pupils' objectives usually develop explicitly, whereupon the procedure turns to planning and working out the plans.

4. The working period is outlined.
    a. Two phases are recognized, planning and working. It must be emphasized that in actuality there is a continuous ongoing process. The approach, the planning, and the working period are not separable but merge, one into the other.
    b. The teacher may plan in advance what to do about the questions and problems which were developed and listed during the approach, or teacher and class may plan co-operatively. In either event, questions, exercises, readings, experiments, excursions, reports, and interviews are planned. Group discussions or socialized recitations, and individual and group reports are used as needed. Committees are set up. Study guides and worksheets may be outlined co-operatively. Exercises will appear for organizing, summarizing, memorizing, practicing, or encouraging creative effort. Possible methods of diagnosis of difficulties, of special disabilities, and possible remedial measures are indicated.

5. Evaluation techniques are planned.
    a. The teacher will indicate how he proposes to gather evidence, showing that the objectives are being achieved. Any and all kinds of tests and evaluational techniques will be used as

needed. Pupil participation in all evaluation will be encouraged. As indicated elsewhere, careful training in methods of appraisal is necessary either in the pre-service or in-service education of teachers.

6. Adequate instructional equipment will be noted and its specific use within the unit indicated.
   a. A bibliography of books useful to the teacher and one of books useful to the pupil will be included. The books and, in some cases, the passages must be related to given objectives and learning experiences.
   b. Lists will be given of materials, exhibits, tools, realia of all types, audio-visual aids available in both school and community, together with sources.

In the preceding outline several operational phases of the unit may be observed. Audio-visual materials ranging from a field trip to a map may well be put to work in one or more of these main phases, namely, the introductory or approach phase, the planning and working phase, and the evaluative phase. Since the working phase may demand pupil reporting, sharing, discussing, constructing, demonstrating, and both individual and group work, a wide range of audio-visual experience situations would be expected. Pupils and their teacher may need to observe as well as make audio-visual materials according to their needs.

As has been said before, operational units reveal a variety of structures. About this point, Stratemeyer, Forkner, McKim, and Passow,[13] previously quoted, observed that, "When a unit of work is defined as a series of related activities needed to carry out a plan or to solve a problem, the particular activities and ways of working will be determined by the nature of the problem or situation faced." According to another authority on unit methods, operational teaching units would consist of two parts the *unit of learning* and the *unit assignment*. In defining these terms and describing his procedures, Billett[14] points out that:

> To any recognizable and carefully designated advance to be made by the pupils . . . the term *unit* is applicable, meaning a *unit of learning,*

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[13] *Op. cit.*, p. 371.

[14] Roy O. Billett, *Fundamentals of Secondary-School Teaching with Emphasis on the Unit Method*, Houghton Mifflin Co., Boston, Mass., 1940, p. 504.

not a topic or some external-thing-to-be-learned, but some definite change in the pupils' capacities for and tendencies toward behavior; and to the planned experience by means of which the teacher hopes the pupil will make a given recognizable and specified advance . . . the term *unit assignment* is applicable, meaning a *unit of guided and directed experience.*

Notwithstanding the possible differences in unit planning for use under varying circumstances, it will probably be helpful for the reader to examine excerpts from two specific teaching units that were constructed by the writer[15] to define two distinct methods for putting motion pictures to work in the classroom. The reader should note that both methods were devised to teach the same set of teacher's objectives. The first method is called the *presentation method,* whereby available motion pictures are related to the problem-solving activities of learners. In this method after appropriate introductory activities were conducted, a study guide was distributed to students and the work was guided by the teacher. Other problems were worked on by groups and individuals; field trips were also made and contacts were made by students with resource people in the locality.

The second method is called the *production method.* In this method teacher and pupils developed the unit together through introductory and planning activity. Their central and unifying problem in this unit was to plan, write, shoot the pictures, and record the magnetic sound track for a 16-mm. sound motion picture. Interviews were held in and outside the classroom, subject matter was mastered by the help of a study guide presenting a set of problems and activities supplied by the teacher when the pupil film planners were ready for it. Since crucial relationships exist between valid educational objectives (teachers purposes) and learning experiences (pupil purposes), the reader should make sure that he recognizes the labels and relates them accurately. The following excerpts are from a *unit of learning,* the best possible statement by the teacher of the objectives of the unit. It was designed for the teacher's use only. It was not handed to pupils.

[15] Carlton W.H. Erickson, "Teaching General Science Through Film Production," *Audio-Visual Communication Review*, Vol. 4, No. 4, 1956, pp. 268–278. See also the nontechnical story of the experiment "Dynamic Learning via Student Film Productions," *Teaching Tools,* Vol. 3, No. 4, 1956, pp. 176–179.

GENERAL SCIENCE

Ninth Grade

UNDERSTANDING AND CONTROLLING WATER FOR MAN'S NEEDS

(Time Allotment: Thirty Periods)

THE UNIT OF LEARNING

A. *General Statement of the Unit*

(This describes in general the nature of the learning product.)

Water is one of man's most precious natural resources. Wherever man lives on this earth, he must find a way to provide himself, and all the living things he depends upon, with water, for without water no living organism can survive. Whether it be water for dry regions, water for washing away wastes, water for doing work, water for keeping clean, water for wildlife and recreation, or water for drinking purposes, each student must realize the vital necessity for wise choices of action not only by himself but by all with whom he shares this earth.

B. *Itemized Statement, or Delimitation of the Unit*

(These are only a few of the purposes in detailed form.)

1. All living things must have water to carry on life processes.
   - (a) A large part of all plants and animals is water; that is, part of the structure of every living cell is water. Some cells contain more water than others.
   - (b) Water is needed for the processes of digestion and circulation within the body and within each cell.
   - (c) to (e). Omitted.
2. As civilization increases in complexity, man's need for water increases.
   - (a) Industrial processes, community and household sewage disposal systems, cooking, canning, heating devices, home laundries, some kinds of refrigeration, hydro-electric plants, hydraulic mining, and irrigation systems demand an ever-increasing water supply.
   - (b) Both rural and city homes use more water today than ever before because of higher standards of living.

3 to 7. Omitted.

8. The absorption of water from rain and snow by the forest floor prevents the water from running off rapidly, thus helping to

eliminate floods and increasing the amount of available ground water.

9 to 20. Omitted.

21. Controlled and wisely managed and conserved, water is man's indispensable servant, a priceless natural resource. Upon the unconcerned and heedless, water can bring death and destruction.

C. *Probable Indirect and Incidental Learning Products*
(Additional results in the behavior of pupils.)

1. The ability to apply facts and principles regarding water to novel situations.

2. The tendency to make wise decisions with regard to using water while on hikes or camping trips.

3. The attitude of responsibility for one's own actions in regard to safeguarding public water supply areas.

4. An attitude of willingness to cooperate with community authorities whose job it is to provide wholesome water for public use.

5. An attitude of concern for the welfare of others.

6. An attitude of open-mindedness about any issue until the necessary facts become known.

Excerpts from the study guide for the pupils follow. The reader should recognize this as the *unit of guided experience.* It represents the best planning by the teacher before the class starts the working period. The problems and activities are, of course, designed to achieve the foregoing teaching purposes.

GENERAL SCIENCE

UNDERSTANDING AND CONTROLLING WATER FOR MAN'S NEEDS

GENERAL STUDY AND ACTIVITY GUIDE

(Only a few of the fifty-five problems are included in this excerpt.)

This study and activity guide is a list of suggested activities for all students to engage in, working independently or in groups. Read the suggestions made in this list and check (√) the problems, questions, or other items which interest you most. Circle those items which you believe you need to study because you lack knowledge. Questions and problems which call for demonstrations, or film showings are marked by an asterisk (*), and these should be worked on by everybody at the same time according to a schedule arranged by the teacher. All other questions, problems, or items may be worked on in any order you choose, but talk with your teacher about where you would like to begin.

In case students wish to engage in additional activities, consult the *special activities* file on the teacher's desk. Each of these cards suggests an activity and supplies the necessary instructions for getting it done. These special activities are not required, but it you are interested, get your teacher's consent before beginning work. Additional activities that pupils think of and other problems encountered should be brought up in class at once.

1. Find out what the daily water consumption is in several American cities. How many gallons of water per person are used every day in your city? Compare the water consumption per person in your city today with the figures for twenty years ago. What conclusions can you draw from your facts? (Ref. 1, page 349; and local water department reports)

2. When water runs off the land too rapidly, what other kinds of damage does it do besides causing floods? Can you give specific examples? (Ref. 2, page 333–345; Ref. 1, pages 456 and 684)

3. Find out what farmers do to prevent water from running off sloping farmland? (Ref. 2, pages 333–345; Ref. 1, page 688)

4. Do you believe that a wise pioneer woodsman like Daniel Boone would have felt safe in drinking water from some of the wilderness streams and rivers? Give reasons for your answer, and ask your fellow students what their opinions are. (Ref. 2, page 593; Ref. 1, page 354)

5 to 6. Omitted.

7. If you were going to camp out for two days by the side of a stream and you were not sure whether the water was fit to drink, what water-purifying equipment would you take along, and just what would you do each day to provide yourself with *pure, tasteful, cool* drinking water? (Ref. 5, page 151 and 394; Ref. 2, page 152 and 596)

8 to 15. Omitted.

* 16. How was the barren Imperial Valley in California transformed into rich farmland? Why is this great accomplishment important to you personally? (Ref. 5, pages 122–125 and 126; Ref. 2, page 304) (Let's take a film trip through the desert to California.)

Film Showing: "Water for Our Dry Land" will help solve this problem. (Your teacher will provide a *Special Study and Activity Guide* to use in connection with the film.)

17 to 21. Omitted. (Seven motion pictures, in addition to a film used in the introductory phase, were a part of this study guide. See sample film guide.)

* 22. In what ways have people been responsible for devastating floods? What ways of controlling water can you suggest to help prevent floods in the future?

Film Showing: "The River" will help solve this problem. (Your teacher will provide you with a *Special Study and Activity Guide* to use in connection with the film.)

23 to 34. Omitted.

35. Two girls are making some candy and they want to boil off some excess water more quickly. One girl argues that if the fire under the kettle were made hotter, the liquid would boil at a higher temperature and hence the liquid would evaporate faster. The other girl said it wouldn't help to make the fire hotter because the liquid wouldn't get any hotter than 212°F. anyway. How would you settle the argument, and what would you advise them to do? (Ref. 3, page 46)

36 to 42. Omitted.

43. What would some of the results be if water didn't expand as it froze? Ref. 3, page 47)

44 to 55. Omitted. (Classroom demonstrations were a part of the study guide but were not included here because of space limitations. For the most part they were to be performed by pupils.)

Basic References for Students (The classroom library references are omitted here. Some forty-two books were included. There were six different titles.)

Supplementary References for Students (Seven supplementary references in advanced related fields were listed in the Study Guide.)

A sample, brief form of film guide, called here a *Special Study and Activity Guide,* is shown next to make clear the relationship of the motion picture to problem-solving activity. The actual problem is also to be found as a part of the film-guide.

GENERAL SCIENCE

UNDERSTANDING AND CONTROLLING WATER

SPECIAL STUDY AND ACTIVITY GUIDE (for item 22 of preceding outline)

This Guide is for use in connection with the film *The River* (31 min–16 sd–USDA–1937), a great documentary film.

PROBLEM: In what ways have people been responsible for devastating floods? What ways of controlling water can you suggest to help prevent floods in the future in our area? (Ref. 3, pages 63, 462–463; Ref. 5, pages

129–131) (Let's travel by film to the great Mississippi River Valley, but first let's study the map to find out what states and rivers are included.)

Important points to look for in the film:

1. Listen for the names of states, rivers, and cities in the great drainage basin.

2. The effect of cotton growing, lumbering, coal and iron mining on the land.

3. The way in which people are working together to restore the Mississippi Valley.

Questions for discussion after the film:

1. Had there been floods in the Mississippi Valley before people moved into the area? Why or why not?

2. Why did the dikes finally prove to be ineffective?

3. Which of the abuses of the land do you believe proved to be most harmful?

4. How will the dams affect the living conditions of people in the Valley?

5. What other kinds of long-term planning besides building dams to control water are essential? *(Can we now complete the main problem?)*

The preceding, preplanned, highly structured teaching unit should be studied critically, and possibilities for improvement should be borne in mind. Questions like the following need to be pondered after its operation is understood:

1. What other audio-visual materials could be related to the problems of a unit in proper balance and variety?

2. What introductory activities are needed when unit organization of the type represented is put to work in the classroom?

3. How are the four steps of introduction, laboratory or working period, pooling and sharing, and evaluation in the learning cycle followed in carrying out such a structured teaching technique?

4. What kinds of unit organization are needed for the primary grades?

5. How would this type of unit organization be modified for the planning in connection with the problem method?

6. For the experience unit?

7. How does this type of unit organization meet individual needs and differences?

8. What is the relationship of the problems in the *Study and*

Activity Guide to the statement of teaching purposes (objectives) in the *unit of learning?*

9. How could production activities such as making tape recordings, handmade slides, posters, charts, and transparencies be incorporated into unit organization as has just been presented?

10. What are some effective techniques for using audio-visual materials in a situation where a textbook is the only guide as to what to teach?

11. Communication theory has made a significant contribution to teaching learning processes. What communication skills are demanded of the teacher and of the director of audio-visual services in implementing effective use of audio-visual materials under valid unit organization processes?

The next teaching unit is very closely related to the preceding one because as was pointed out earlier it is based on the same set of teaching objectives. The orientation for student activity, however, is vastly different. This unit, operating as the A-V production method described earlier, uses a central experience, the planning and production of a sound motion picture film as the hub of all learning activity. The excerpted *Study and Activity Guide* that follows was distributed to the class only when the introductory activities and the major problem had been accepted. Planning followed class observation of a specially prepared bulletin-board display on motion picture production in Hollywood and an eye-filling equipment display.

GENERAL SCIENCE

UNDERSTANDING AND CONTROLLING WATER FOR MAN'S NEEDS

GENERAL STUDY AND ACTIVITY GUIDE

A Suggested Plan for Getting Started on Our Own Motion Picture about Water

Important Decisions We Have to Make To Do a Good Job:

1. How shall we proceed to learn enough about water so that we can make our film scientifically correct? (One way would be to have each student do two of the problems right away. Then we can begin planning our film content with the help of our student specialists. Later each student can work on more problems.)

2. What should be the main purpose of our film, and to what group or groups should we show the film? (Who knows, maybe the film will be good enough to be televised, but at least good enough to show to our whole school.)

3. What should be the title of our film? (See our posted list of suggested titles.)

4. How can we divide up the work of preparing a film story, a "shooting" script, and a "sound" script; and also how can we decide who will be the film director, who will be on the camera crew, and the projection crew? Also who will be the film editor, the script and film secretaries, the film narrator, and the recording engineer? (Your teacher will provide you with a *Special Study and Activity Guide* showing a suggested outline of necessary jobs.)

Important Research Work Needed for Film Production

Here are the suggested activities which everyone should work on in some way, individually or in groups. Read the questions, problems, or other items, and check (√) those you would like to investigate in order to become an expert adviser on, reporting to the class if necessary about what you find out. Draw a circle around those items which you feel you need most to know about because you lack knowledge and experience. *Tell your teacher where you wish to begin.*

A few of the items in this Guide involve demonstrations which the teacher and/or students will perform according to a schedule. Everyone should work on these demonstration items at the same time.

If time permits and if you want to engage in extra activities, consult the Special Activity file cards on the teacher's desk. Each of these cards suggests an additional activity accompanied by special directions for getting it done. These activities are not required, but if you want to engage in them, get your teacher's consent before beginning work.

1 to 55. (Here followed a set of problems and activities, even demonstrations, designed to develop insights about content. So far as the students were concerned, the problems were being worked on just to learn enough to make good judgments about what to include in the film treatment. Other plans for subject-matter mastery could have been developed.)

In the next sample the reader's attention is called to the fact that teachers and pupils alike need help in organizing for a technical project of this type, so a brief, special study and activity guide was prepared to assist in saving time. The following example is self-explanatory:

GENERAL SCIENCE
UNDERSTANDING AND CONTROLLING WATER FOR MAN'S NEEDS

SPECIAL STUDY AND ACTIVITY GUIDE
FOR
FILM-PRODUCTION METHODS AND JOB OUTLINE

This Guide is provided to help the class organize as a motion picture production team. *Each student should make notes of class decisions in the proper places and make a record of his or her own assignments as well.*

Individuals to work alone or in groups according to responsibilities.

1. *Film Production Methods:* Acquire accurate knowledge of subject matter to be used.
   Jobs to be done: Study to master important scientific facts and principles having to do with the use and control of water for man's needs.
   Who participates: All students in the class, studying, summarizing, pooling and sharing, using problems, questions and items in the General Study and Activity Guide.
2. *Film Production Methods:* Select theme for film.
   Jobs to be done: Decide on purpose of the film, to what groups it is to be shown, and tentative film title.
   Who participates: All members in cooperative decisions.
3. *Film Production Methods:* Outline the content of the proposed film, and get ready for camera work.
   Jobs to be done: Write film story in brief. Prepare list of scenes to tell the story. Develop filing system for prepared materials. Post on wall the written or typed work for each stage of development.
   Who participates: Prepare outline of main points cooperatively, then small groups do developmental work for each main point, mapping out specific scenes.
4. *Film Production Methods:* Produce detailed plan for shooting.
   Jobs to be done: Make a list of scenes by number, complete with location, shooting distance, required lighting, and estimated length of footage.
   Who participates: Director, cameraman, lighting engineer, meeting with those groups of students that developed list of scenes. Entire class gives final approval at each stage so that scenes can be shot at once.

5. *Film Production Methods:* Cinematography.
   Jobs to be done: Shoot each scene.
   Who participates: Director and camera crew, also lighting crew. Committee on location makes arrangements as needed.
6. *Film Production Methods:* Edit the scenes.
   Jobs to be done: Splice scenes together in order, after projecting scenes in class.
   Who participates: Class looks at all scenes. Film editing crew and director do final cutting and splicing. Film sequence secretary maintains scene file. Class decides on retakes.
7. *Film Production Methods:* Produce titles.
   Jobs to be done: Plan and complete art work and lettering as needed.
   Who participates: Art committee with chairman.
8. *Film Production Methods:* Produce sound script.
   Jobs to be done: Write comments for film scenes, selecting words to fit pictures and knit film story together in terms of film purpose. Select music for introduction and interludes. Select narrator by trying out voices of candidates on tape recorder.
   Who participates: Sound Script Committee with class approval. Narrator selected by pupils after listening to recommendation of four best voices by Sound Recording Committee.
9. *Film Production Methods:* Record sound.
   Jobs to be done: Record sound on magnetic track.
   Who participates: Narrator, recording engineer, director, and sound script editor.

Show completed motion picture at school assembly or to other groups according to plans.

* * *

Film Production Personnel Roster

1. Teacher: supervisor and guide

2. Film director (chief student executive. Will work closely with cameraman, lighting engineer, and writers.):

3. Subject-matter specialists: Each person to expand the scope of his knowledge continuously to all phases of the subject as indicated in the *General Study and Activity Guide.*

4. Film story and sequence editor:

5. Cameraman:

6. Lighting engineer:

7. Chief projectionist:

8. Secretary for written work:
9. Secretary for film sequences:
10. Committee on contacts and arrangements:
11. Editing committee and chief editor:
12. Art committee and chairman:
13. Sound recording committee and recording engineer:
14. Sound script committee and chairman:

In this particular system of procedure, an additional two-page special study guide entitled *Some Facts and Suggestions About Film Production* was also prepared and distributed by the teacher to inform everybody quickly how to write the film story, to explain the need for lighting indoor scenes, and to supply information about film-shooting speed, length of scene, sound track, and cinemaphotography. This guide is not reproduced here, but it is mentioned to point out the need to conserve classroom time by minimizing emphasis on film production details in favor of analyzing and reacting to the content to go into the film story.

Readers analyzing this procedure should bear in mind several questions:

1. Could a teacher and class group get completely lost in film-production details?

2. How would undue emphasis upon production details be likely to affect the development of understanding as designated in the statement of teaching purposes stated prior to the first teaching unit?

3. If all the work of preparing the attack on subject-matter coverage for film content were left to pupils, what would be the effect upon time consumption?

4. Do you predict that youngsters would work hard, enjoy, and work together on an *experience* unit like the one described?

5. What is the difference between teacher's purposes (educational objectives at the vital classroom level) and pupils' purposes as they appear in the two unit organization plans presented by the writer?

6. What are the implications in this method for communicative theory and skills on the part of pupils? On the part of the teacher?

The preceding teaching units were not selected to give emphasis to the use of any one kind of audio-visual material nor to present a complete analysis of the motion picture production process. It has already been stated that they were shown to provide a comparison of basic audio-visual methods and to provide written examples for critical appraisal. The director of audio-visual services may, in co-operation with other curriculum workers, need to encourage penetrating thought on the part of teachers about teaching plans and unit structures and about the unique relationship of audio-visual materials to such plans. Such advice and counsel cannot be readily given if the director has not come to grips with theory.

The remaining two essentials for expert performance to be discussed in this chapter are also closely related to teaching and learning theory; however, they are treated separately. Both are strong contributors to high-caliber performance on the job. The first essential is that the director needs to give thought to the basic roles that audio-visual materials play in helping teachers, and the second is that the director's thinking about audio-visual methods will be facilitated if he has the power to apply a well-defined set of principles.

UNDERSTANDING THE ROLES THAT AUDIO-VISUAL MATERIALS PLAY IS AN ESSENTIAL

As the reader examines the following roles, as defined by the writer to facilitate his own thinking in the field, he should explore their meaning and potentialities as far as is needed. One briefly stated example accompanies each role in terms of assistance to teachers.

Role 1: *Audio-visual materials provide the means for extending the horizon of experience.*

EXAMPLE: A teacher takes his class on a jungle journey, using the film *Nomads of the Jungle*. Only audio-visual materials with appropriate production characteristics lend themselves for use as "real" experiences. (Filmstrips and even study prints are not excluded.)

Role 2: *Audio-visual materials provide rich sources of meaningful information.*

EXAMPLE: A class is constructing a large model of a dinosaur and several smaller models for a school display. Teacher and pupils need specific information to solve a number of subsidiary problems. They organize their questions and take a field trip to a museum.

(They could possibly have looked at a filmstrip, a set of study prints, or a motion picture instead and/or in addition.)

Role 3: *Audio-visual materials may serve as springboards into a wide variety of learning activities.*

EXAMPLE: A first-grade teacher shows her class a motion picture, "*Robin Redbreast,*" and then constructs a reading chart on the basis of her pupils' stories. Pupils will then read what they have told the teacher and in addition may set up bird feeders, sing songs, and draw pictures.

Role 4: *Audio-visual materials provide a kit of tools for the teacher in carrying out diagnostic, research, and remedial work demanded by up-to-date instructional purposes.*

EXAMPLE: A teacher decides to use the flashmeter short-exposure technique to discover visual-span status of pupils; then she organizes daily remedial practice sessions to improve reading speed and comprehension.

Role 5: *Audio-visual materials assist the teacher in overcoming physical difficulties of presenting subject matter.*

EXAMPLE: A teacher has made a set of "overlay" transparencies for presenting complicated relationships in mechanical drawing. This eliminates time-consuming chalkboard drawings in advance of certain class groups each term and assists the teacher to communicate effectively. (The use of an opaque projector to enlarge a swatch of cloth to analyze the weave or to project an only picture or cartoon for the entire class to view at once is another example.)

Role 6: *Audio-visual materials provide rich sources of pupil purpose when they are produced jointly by pupils and teacher.* (Thus actually making a motion picture, a model, or a set of handmade or photographic slides, a magnetic tape, a radio or television program, or an exhibit for a store window downtown.)

EXAMPLE: A ninth-grade civics teacher worked along with her group in planning the production of a set of color slides with tape commentary on bicycle safety to be presented to third-, fourth-, and fifth-grade classes. (Would the producers be likely to learn anything themselves?)

Close scrutiny of these roles and their accompanying examples should show that audio-visual materials may be put to work in the classroom by the two methods already described, namely, the *presentation* method and the *production* method. All the commonly known audio-visual materials from models to graphics, the field trip being an exception, lend themselves to this unique kind of classroom use. Teachers who have a competent audio-visual specialist on hand for advice, a few pieces of basic equipment, and a stock of etched glass, film stock, and tape or other supplies can get undreamed of work, concentration, and cooperation out of any group of students at almost any level by the cooperative planning of production projects around which all manner of learning activities, constructing, studying, searching, writing, outlining, problem-solving, arguing, cooperating, questioning, drawing, generalizing, and others may be unified. Specifically, Roles 1 through 5, as defined in the preceding text, involve the use of materials already available or those prepared by the teacher to communicate effectively for a wide variety of purposes. Role 6, as can be seen, is a vastly different role requiring a different system of use. The reader should not miss the point that pupil purposes mentioned in Role 6 are the problems, jobs, assignments, and activities that pupils want to engage in and accomplish. These are the vehicles by means of which the changes in behavior, designated by teachers as their educational objectives at the classroom level, are achieved. The reader should also properly conclude that more than one role may be played at the same time by a given kind of material. A broad understanding of these roles or a similar system developed by the director himself is likely to increase the scope of his services and counsel and thus lead to outstanding performance.

The last essential for expert performance selected for treatment in this chapter is discussed next. It deals with the urgent need for the director to develop a set of valid principles upon which to base his thinking on matters pertaining to effective classroom use of audio-visual materials.

THE POWER TO APPLY UTILIZATION PRINCIPLES IS AN ESSENTIAL

No aspect of professional thinking is more important than the director's penetrating insight into what constitutes effective utilization of audio-visual materials. This essential must be thought through to the best possible conclusion. The director ought to study the relationship of principles to techniques, and then develop from the literature, from his own experience, and from statements of leaders in the field a set of comprehensive working principles that will point the way to effective supervision of audio-visual methods in action. Burton and Brueckner[16] stress this point of view when they say:

> Techniques are necessary and important—in fact, nothing could take place in any field without *ways* of doing things. Principles—that is, general truths or concepts or accepted tenets—are also necessary. New techniques are constantly being devised which are better ways of carrying out principles and which, furthermore, must be chosen discriminatively to fit given circumstances. Principles are guides that help in selecting techniques. Studies in both industry and education show that workers equipped with the "theory of the thing" are more efficient than those equipped only with sets of techniques which they may not fully understand. . . . The so-called practical teacher is the worst offender, since his level of training and insight is that of the device and not that of intelligent independent invention of techniques based upon principles.

Everybody talks about effective utilization of audio-visual materials, but just what is it? When does a teacher know it has happened? How does an audio-visual specialist know that a teacher is competent in his field? Is it likely that competence with motion pictures is entirely different from competence with filmstrips? Is competence just showmanship with equipment? A definition for a frame of reference is necessary. The author's definition is a brief one and is as follows: *Effective utilization is the system of judgments and procedures by means of which audio-visual materials are put to work to accomplish valid teaching objectives, with proper emphasis upon accepted principles of teaching and learning.* Barnard[17] of business philosophy fame distinguished between *effective* and *efficient*. *Effective*, he said, meant reaching a specified objective, and *efficient* meant reaching an objective in such a way as to leave along the trail of action a net surplus of satisfaction for all concerned. If this insight is embraced, it follows that the best system of judgments and procedures is one that is effective and at the same time efficient.

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[16] By permission. From Wm. H. Burton and Leo J. Brueckner, *Supervision a Social Process*, 3rd ed., Appleton-Century-Crofts, Inc., New York, © 1955, p. 73.

[17] C.I. Barnard, *Functions of the Executive*, Harvard University Press, Cambridge, Mass., 1950, pp. 19–20.

Attention to teacher ability to formulate valid educational objectives at the classroom level is of extreme importance as a fruitful line of attack for teaching teachers how to put audio-visual materials to work effectively. The author has stated his point of view briefly in a magazine article,[18] and its repetition here will supply the needed explanation:

> A fresh look at teacher ability to formulate valid purposes as reference points for decision and action is called for, because not only will straight thinking about teaching purposes take the mystery and guess-work out of effective audio-visual methods, but also it will make teaching easier and more accurate.
>
> This becomes obvious only when it is recognized that the specific purpose is the forerunner of a problem situation which a teacher sets up for his pupils (or leads them to set up for themselves); that it is a vital criterion of whether a specific film is a valid choice or not; that it facilitates the choice of what to say or do to build learner readiness to see a film; and that it determines the nature and quantity of follow-up activity which should ensue [discussion and/or practice].
>
> Finally, a specific purpose is the only valid way by which a teacher can discover if he has been both effective and efficient. It appears that extra effort on purposes is worth while.
>
> At the risk of oversimplification, let us define valid teaching purposes as the specific, identifiable understandings, abilities, attitudes, and appreciations which teachers set out to develop in their pupils. Doubtlessly differences of opinion over terminology and procedure should and will arise, but the point of value here is the emphasis upon the ability to identify the end products of the teaching process, and to state them with clarity and consistency. No one claims that the types of purposes stated above are to be achieved separately in pupils, or that, to be specific, an ability is taught apart from the requisite understandings, attitudes, and appreciations. Furthermore, such valid teaching purposes ought to be a part of the larger grouping of purposes which even before the film experience has been chosen is the teaching unit.
>
> Therefore, teachers who are accustomed to work from such statements of purpose have but to identify selected objectives toward which the film experience will make contributions . . .
>
> The writer has discovered also that many teachers do not differentiate

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[18] Carlton W.H. Erickson, "Why Did You Use That Film," *Audio-Visual Instruction*, Vol. 1, Issue 5, 1956, p. 135.

between their own and pupils' purposes. And strangely enough unless supervisors make an effort to teach teachers how to formulate purposes, this deficiency may never be detected.

In an attempt to set up a system by means of which teachers could be guided in making a set of creative decisions for each situation, film, or filmstrip, the writer formulated five basic principles and made an analysis of the kinds of performance that each principle would demand if applied in the classroom. These principles are important to the director as a basis for self-scrutiny in terms of his own needs, and in addition they will serve him well in his work of developing competence in teachers. The author believes that understanding and creative application of such principles as are properly based upon wide experience, valid psychology of learning, and a sound philosophy of education mark out the royal road to that competence. The principles are as follows:

Guiding Principle No. 1: Teachers should base their selection of high quality audio-visual materials upon valid teaching purposes and upon the unique characteristics of a specific group of learners.

This principle in action becomes the *ability to find and choose audio-visual materials.* This ability must be broad enough in scope to encompass the entire range of A-V material from field trips to a pictogram, from bulletin boards to a tape recording, and from the teacher production of a transparency to the teacher-pupil production of a motion picture. Probably several years of skill-building effort could be expended on this ability alone.

This basic ability demands the subsidiary abilities to:

1. Identify and write out in consistent form the valid purposes, that is, the understandings, abilities, attitudes, and appreciations that teachers hope to develop in children.
2. Select all kinds of audio-visual material in terms of valid teaching purposes.
3. Predict that a certain experience among many will influence youngsters in certain ways.
4. Relate precisely various kinds of A-V material to problems as set up in good teaching units.
5. Use A-V sourcebooks and catalogs for finding suitable material.

techniques for using them. No evaluation can be sound unless valid reference points are known. Such reference points must be the teaching purposes (objectives) underlying organized pupil problem-solving activities, toward the accomplishment of which the audio-visual materials will make a contribution.

This basic ability demands the subsidiary abilities to:

1. Scrutinize one's own techniques in terms of specific teaching purposes and in terms of valid principles of learning.

2. Judge learners' response for validity.

3. Judge worth of materials in terms of specific teaching purposes and pupil goals.

The influence of such principles is revealed in examples of the plans of teachers who have learned to think in critical terms about the *why* of audio-visual materials and in terms of principles-techniques relationships. The author is indebted to some of his students for permission to use the following excerpts from teaching plans submitted to him in connection with formal audio-visual education course exercises.

Example 1: The following is a rather complete and well-stated set of teacher's purposes for using the film *How to Make a Silk-Screen Print* with a graphic arts class at Stamford High School, Stamford, Conn. This example shows the influence of Guiding Principle No. 1.[19]

THE UNDERSTANDING THAT:

1. Only designs with flat, solid color areas can be printed successfully by the beginner.

2. Care must be exercised in keeping hands and the working area clean while printing, otherwise smudges will appear on the finished print.

3. A lacquer-type solvent will dissolve a lacquer-type film.

4. Accurate cutting of the film is required for perfect register.

5. The entire screen must be blocked out except for the printing areas.

6. It is important to have the silk stretched both tightly and evenly when fastening it to the frame.

7. A new silk must be washed with soap and water to remove the fillers and starches before being used, otherwise the film will not adhere to the silk.

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[19] By permission of William H. Burns.

8. Extreme precaution must be taken not to use too much adhering liquid when attaching the film or it may be "burned." Only a small area should be worked at a time.

9. A non-lacquer-type solvent must be used when cleaning the screen if the screen is to be used again.

10. A lacquer-type solvent must be used to clean the screen when the job is finished.

11. The mesh of the screen must be absolutely clean if it is to be used again successfully.

12. Caution must be exercised when using inflammable liquids to have a window open and to make sure that there are no open flames nearby.

THE ABILITY TO:

1. Make a suitable original drawing or to trace a design that can be printed in two or more colors by the silk-screen process.
2. Cut a lacquer-type film stencil with a stencil knife.
3. Strip a lacquer-type film stencil.
4. Adhere a lacquer-type film stencil to the silk properly.
5. Peel the backing paper from the film.
6. Make corrections with a lacquer filler.
7. "Bleed" the first colors under all adjacent succeeding colors.
8. Register two or more colors accurately.
9. Use a squeegee in the proper manner: (a) correct angle, and (b) right amount of pressure.

THE ATTITUDE OF:

1. Meticulousness.
2. Patience.
3. Cleanliness.
4. Desire to obey safety rules.

THE APPRECIATION OF:

1. Good workmanship.
2. Appropriate designs.

Example 2: This example shows influence of Guiding Principles 2 and 4 in action in connection with the film *Farmers of India*, being used with a sixth-grade class.[20]

The teacher planned to make the following introductory statement:

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[20] By permission of Madalene Hayes, North Mianus School, Riverside, Conn.

Since India is so far away and we cannot visit these people to learn about their ways of living, let's travel by film to the Ganges Valley and let Chota Lal be our guide. Chota Lal is an Indian boy, your age, and the way he lives is typical of farm life in the Indus and Ganges Valleys. Before a person travels to a far off land he wants to know where he is going, so let's study our map.

She also planned to have the following questions formulated and written on the chalkboard before the film was shown.

Where does the Ganges River get its water?
What makes the Ganges Valley fertile?
Why are there so many farmers living in the Ganges Valley?
How are the farmers different from our New England farmers?
In what ways are they like our New England farmers?
Where do the farmers sell their food?
What are their large cities like?
If most of India's children work, what kind of education do they have? How is it like ours and how is it different?
What kind of religion do they follow?
Why are farmers so important to India?

After the film (Guiding Principle No. 4 in action) she planned to check students' observation relative to the questions presented before the film showing, after which she planned to guide pupils in setting up individual and group activities (pupils' purposes) as follows:

1. Do research and prepare special report topics such as the Caste System, or the Hindu Religion.
2. Collect pictures and news for preparing a bulletin board display for the corridor.
3. Make dioramas depicting scenes in the life of an Indian girl or boy such as: learning to read at school, bathing in the Ganges, going to market, helping at home, helping in the fields, and eating a meal.
4. Make India pottery from clay.
5. Bring things, made in India, from home and set up an exhibit.
6. Construct a relief map showing the snow-capped mountains and the Ganges River Valley.
7. Compile an annotated bibliography of materials about India that are available in our school library.

Example 3: This example is used to show relationships between the film showing of *Baby Animals*, the teacher's valid purposes set up as a basis for the experience, and the pupils' purposes before and after the film showing in a first grade science unit.[21]

Guiding Principle No. 1 in Action: Statement of Teachers Purposes

THE UNDERSTANDING THAT:

1. Some very young animals are different than their parents in appearance.

2. Many baby animals are helpless and require the care and training of their parents.

    a. Some animals teach their young to swim, fly, climb, etc.
    b. Some animals teach their young to be cautious, and protect them from danger.
    c. Some animals teach their young to find food.

3. The food requirements vary for young animals.
    a. Some animals eat food similar to that of their parents.
    b. Some young animals require milk.
4. Different kinds of animals carry on different kinds of activity.
5. Different kinds of animals require different types of care.

THE ABILITY TO:

1. Read.
2. Make simple generalizations.
3. Keep simple but accurate records.
4. Care for young animals.

THE ATTITUDE OF:

1. Kindness.
2. Patience.
3. Responsibility.
4. Reliability and alertness in making observations.

THE APPRECIATION OF:

1. The loving care that animals give their young.
2. Well cared-for pets.

Guiding Principle No. 2 in Action: The Plan for Readiness

She writes: I shall develop learner readiness by having children tell about baby pets they have or have had at home. During these stories I shall ask questions similar to the following:

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[21] By permission of Elizabeth G. Banks, Pleasant Valley School, Groton, Conn.

1. Who feeds your pet?
2. What does your pet eat?
3. Who gives your pet a good home?
4. What do you have to teach your pet?

After the children have talked about their pets, I shall ask them: Who takes care of animals that are not pets—deer, racoons, skunks?

1. Do their mothers take care of them in the same way that you do for your pets?
2. What do you think they teach them?
3. How do you think they teach them?

Following a brief discussion of these statements, I shall tell them that I have a film that shows many kinds of animals with their babies. I shall tell them to watch it carefully to see in how many ways these animals take care of their young.

Guiding Principle No. 4 in Action: The Plan to Guide Responses of Pupils

After the film showing, this teacher planned with the following questions to guide youngsters in pooling information about what they had seen: Were we right? Did these mother animals take care of their babies? How did they take care of them? What did these baby animals eat? Did all of the baby animals eat the same things that their mothers did? What animals did? What food did the others have? What things did these mother animals do for their babies that you do for your pets? Did all of the babies look exactly like their mothers? Which ones looked different? How were they different?

Then she planned to have first graders bring in pictures of their pets for a bulletin-board display that focused on a large checklist to be drawn up by teacher and pupils to check off daily the ways in which pupils' pets were cared for. Individual records were kept at home, then brought in for summarization of habits, care, and training. Another activity planned was the observation and care of a cat and her kittens, with a view to making up an experience chart for reading purposes. Other language activities were to be included also.

These principles apply to all audio-visual materials. The way teachers apply them to any given situation becomes a unique system of decisions, decisions sometimes made quickly, and sometimes made only after painstaking study. These principles are also intended to operate effectively under all curriculum designs, from traditional to modern, and are intended as well to operate in the director's in-service education program, as will be seen later. The reader is cautioned against misinterpretation of the excerpted plans for action with films. These plans may appear less vital than they really are, since they are shown out of context with normal class activity. Purposes were of course stated in terms of local curriculum designs and in terms of teachers' own capabilities. Moreover the purposes were stated with the full understanding that they are not separately achieved in learners nor even completely achieved by the film and related experiences.

Throughout this chapter emphasis has been given to the importance of a framework of reference for the director's decisions on a high plane of performance. He has been urged to heed not only his pervasive attitudes for job operations, but among other essentials he has been urged also to recognize the urgency of seeking a correct operational view of teaching and learning. His constant growth along these promising lines will greatly increase his potential for effectiveness.

SUGGESTED ACTIVITIES

1. Define the term *democratic conscience*, and state how you believe it is developed. (By all means include the principle of democratic action stated in man-to-man terms.)

2. What is Mort's concept of *Common Sense of the Culture?* How will this knowledge, if used by you, guide your performance on the job?

3. Just how do philosophical and psychological considerations affect your program of audio-visual services? Give at least two specific examples.

4. Define *teaching* and *learning.*

5. What basic roles do audio-visual materials play in helping teachers? Give two examples of each not already mentioned in the content of the chapter.

* 6. Define valid teaching objectives and explain how they are to be stated by giving examples. How do curriculum designs affect the nature of teachers' purposes?

* 7. Can you make a succinct and correct statement as to how to construct a desirable teaching unit? How will various curriculum designs affect unit organization procedures?

8. Give at least five examples of the two basic ways of putting a given kind of audio-visual material to work in the classroom.

9. What is the difference in meaning between the terms *principle* and *technique?*

10. Can you make decisions about audio-visual methods in accordance with basic principles? Can you prove it by stating the principles and giving a concrete example of your application of each?

11. What does it mean to say that audio-visual specialists are "media" specialists, not "content" specialists? Are you one or the other, or both?

12. Do you fear the learning of new skills? Name some new skills that you have developed lately.

13. How will the ability to perceive definite and worthy goals and the ability to define problems lend power to your personal performance. Give specific examples.

* 14. Which one of the following topics (or any other suggested by the content in this chapter) would you be willing to write a report on and deliver in class via tape? Time limit for each presentation is three minutes:

a. *Old and New Concepts of Educational Leadership.*
b. *Should Students in Specialized Education Ever Be Flunked?*
c. *Thought-type Questions: A Technique for Using Audio-Visual Materials.*
d. *Learn While Trying: A Courageous Way to Teach.*
e. *The Relationship between Teacher's Purpose and Pupil's Purpose.*
f. *Personal Beliefs: Dynamos for Action.*
g. *To What Am I Committed in Audio-Visual Education?*

15. Appraise your own strengths and weaknesses with respect to the essentials for expert performance as discussed in this chapter.

16. Examine carefully at least two units of work, one where activities are organized around the presentation of motion pictures and the other where activities are organized around a central core of pupil purpose such as the production of a motion picture. If you don't believe that the procedures are valid, how would you proceed differently? If you like what you find, summarize the elements of the procedure.

17. "Lay off the theory, stick to practice," says one of your colleagues. Do you agree? Would you argue the point? What are some conclusions you could draw about the person who said it?

18. If you have time, examine the lists of teaching and learning principles and find the points that are common to all three sets as stated in this chapter. Identify some of these principles that are directly related to the five principles for the utilization of audio-visual materials. Identify some that are indirectly related to them.

19. Do psychological principles really have anything to do with your job as a specialist?

20. Examine carefully the set of five basic principles for using audio-visual materials as stated in this chapter; then answer the following questions: What is the relationship between teacher purposes and learner participation during or after the use of audio-visual materials? What are some good reasons for putting emphasis on the problem of formulating valid educational objectives at the everyday teaching level? What is the difference between teacher's purpose and pupil purpose? Which one is, or are both, vital in selection of audio-visual materials for classroom use?

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CHAPTER THREE

TEACHING A-V SKILLS TO TEACHERS

IN the first chapter four essential roles for the director of audio-visual services were identified, namely, the roles of executive, supervisor, audio-visual specialist, and equipment technician. It is the second of these, *the supervisor,* upon which this chapter turns the spotlight of attention. It was stated earlier in connection with the role of supervisor that the director needs to see his mission broadly in terms of guiding teachers in specialized methods to greater valid achievement. Therefore he needs to be an effective teacher himself, needs to understand the nature of learning, the nature of curriculum design, the nature of planning and organizing for teaching, and needs to be able to evaluate instructional processes in action. In education, valid achievement has but one reference point, *bonafide* educational objectives, and since this is true, then the supervisor must inescapably be identified as a co-worker in the field of curriculum. Every list of duties for the director of audio-visual services includes the function of helping teachers use audio-visual materials more effectively, and it is the purpose of this chapter to point out fruitful ways of getting this job done.

In a tour of public school audio-visual service centers, concentrating for the most part on western cities, the writer found a diversification of activities, a wide range in the intensity of effort and progress, and a wide range of thinking among directors of audio-visual services about what constituted the most promising procedures for the accomplishment of in-service growth of teachers in this area of competence. In most cases the job was being carried out in the face of great odds. That is, the pace of accomplishment seemed to be most unsatisfactory. Some directors sought to work through curriculum specialists only. Others felt that good promotional practices including catalogs and subject-correlated listings were sufficient and that skill-building activities were the concern of the subject-matter specialists and methods people. One person actually spent approximately four hours out of every school day visiting schools to talk with audio-visual school-building coordinators, or principals, and to make visits to teachers' classrooms. Other in-service education programs were operating on the basis of teamwork on a specific schedule of instructional meetings for and with members of the teaching staff.

This chapter cannot undertake, however desirable it may be, to synthesize the content of courses in curriculum, supervision of instruction at elementary and secondary school levels, and school administration. The student must prepare himself diligently in these fields if he is to succeed in his leadership of audio-visual services, but it is assumed that such effort will either precede or follow the study of material herein assembled. However, as a proper orientation for the learning activity promoted by this chapter the following questions need to be raised and answered:

1. What is the definition of modern supervision?
2. What is in-service education, and what is the role of the local school system in accomplishing it?
3. Is continuous in-service education necessary?
4. When is a teacher competent in the use of audio-visual materials?
5. Do experienced as well as beginning teachers need help with audio-visual methods?
6. How may the goal of competence be reached?

The answers to these questions are given in this chapter.

MODERN SUPERVISION DEFINED

Burton and Brueckner[1] define supervision as "an expert technical service primarily aimed at studying and improving cooperatively all factors which affect child growth and development." The term *supervision* carries with it the connotations of inspection and "snoopervision" of an earlier day; hence it may be well to expand the above definition by another quotation from Burton and Brueckner[2] pointing up the contrast between traditional and modern versions of the supervision process:

Traditional	*Modern*
1. Inspection	1. Study and analysis
2. Teacher focused	2. Focused on aim, material, method, teacher, pupil, and environment
3. Visitation and conference	3. Many diverse functions
4. Random and haphazard or a meager, formal plan	4. Definitely organized and planned
5. Imposed and authoritarian	5. Derived and cooperative
6. One person usually	6. Many persons

The director's role as supervisor must be in line with modern supervision concepts if his work is to prosper.

IN-SERVICE EDUCATION AND THE LOCAL SCHOOL SYSTEM

The question to be answered is: What is in-service education and what is the local school system's role in accomplishing it? In-service education is certainly implicit in the term *supervision*. Hass[3] defines in-service education as follows: "Broadly conceived, in-service education includes all activities engaged in by the professional personnel during their service and designed to contribute to improvement on the job." In implementing a program of in-service education, the role of the local school system is vital. The reader should pay close attention to what Weber[4] has to say on this point:

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[1] William H. Burton and Leo J. Brueckner, *Supervision a Social Process*, 3rd ed., Appleton-Century-Crofts, Inc., New York, 1955, p. 11.

[2] By permission. From William H. Burton and Leo J. Brueckner, *Supervision a Social Process*, 3rd ed. Appleton-Century-Crofts, Inc., New York, © 1955, p. 13.

[3] C. Glen Hass, "In-Service Education Today," Chapter II, *In-Service Education*, 56th Yearbook of the National Society for the Study of Education, Part I, University of Chicago Press, Chicago, Illinois, 1957, p. 13.

> One of the most neglected agencies . . . has been the local school system. . . . Boards of education, school administrators and teachers have assumed to a considerable degree that the chief source of growth of teachers lies in the practice of attending summer sessions, attending extension classes, and otherwise engaging in study outside the sphere of the school itself . . . such activities are of great significance and importance, yet one of the most fruitful agencies for educating teachers in-service could and should be the school system itself. . . . Real learning should suggest solutions to real problems which the teacher has the occasion and opportunity to test in application.

The director of audio-visual services should work toward the best possible balance between the agencies being used for getting the in-service job accomplished. His own leadership, functioning in the natural laboratory of school activities, seems to provide the most direct path to competence. At any rate, the local situation with its unique needs ought to be made the focal point for all such channels as extension classes, summer study, and conferences used in the in-service education effort.

IS CONTINUOUS IN-SERVICE EDUCATION NECESSARY?

The answer to this question is an affirmative one, but why? Hass[5] puts it this way.

> Continuous in-service education is needed to keep the profession abreast of new knowledge and release creative abilities. . . . An additional purpose is to give the much needed help to teachers who are new. . . . At least for the present, a third purpose . . . must be to eliminate deficiencies in the background preparations of teachers. . . . New teachers rarely begin their

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[4] By permission. From C.A. Weber, *Personnel Problems of School Administrators*, McGraw-Hill Book Company, Inc., New York, 1954, pp. 72–73.

[5] By permission. From C. Glen Hass, "In-Service Education Today," Chapter II, *In-Service Education*, 56th Yearbook of the National Society for the Study of Education, Part I, University of Chicago Press, Chicago, Ill., 1957, pp. 13–14 and pp. 29–30.

teaching service at the peak of efficiency. After a few years in college, beginning teachers are often able to do little more than toddle through their new world of baffling pupil personalities and unfamiliar subject matter. . . . In recent years many school systems have as many as 30 percent of their teachers starting their professional careers or possessing less than two years of experience.

If the need for and operation of in-service education programs is as widespread as is reported, this author can see no reason why the leader of audio-visual education should mistake his role and lose himself in his technology.

WHEN IS A TEACHER COMPETENT IN THE USE OF AUDIO-VISUAL MATERIALS?

No one can answer this question properly in a sentence or two. An analysis is called for, and to see such an analysis, the reader is referred once again to Chapter Two which discusses the basic utilization principles and the kinds of performance they imply in the classroom. One thing that the director as a supervisor needs to be clear on is that competence in this field can be stripped of its mystery. There need be little guesswork involved because competence exists in the essential beliefs, understandings, and commitments that teachers possess about audio-visual materials, and in the definite, identifiable abilities that teachers possess for putting them to work. Competence must certainly have to be judged as a matter of degree, since very probably no teacher will be totally incompetent or perfectly competent.

DO EXPERIENCED AS WELL AS BEGINNING TEACHERS NEED HELP WITH AUDIO-VISUAL METHODS?

A few audio-visual directors have voiced the expression that the teacher preparation program must turn out at the pre-service level an individual adequately competent to put the wide range of audio-visual materials to work in the classroom. Such demands are unrealistic in terms of today's situation. The best teacher training institutions in the

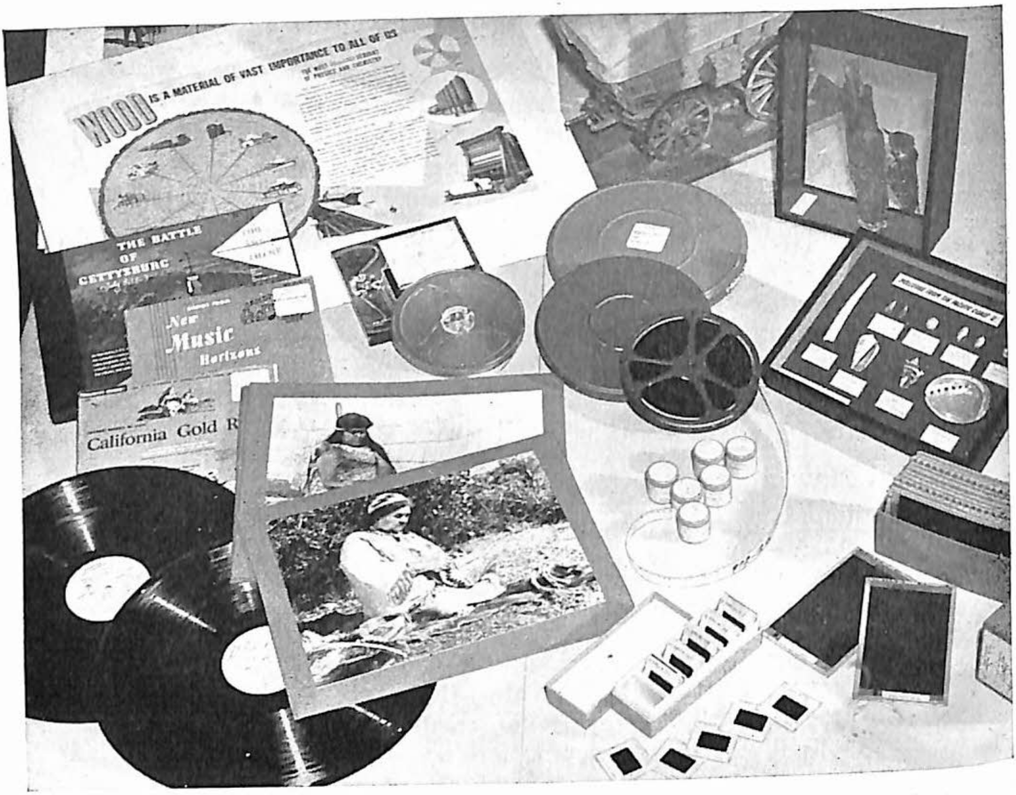

Fig. 3–1. **What skills do teachers need to develop to put the above array of audio-visual material to work in the classroom?** ***(Courtesy Pasadena City Schools.)***

country can do little more than introduce their students to the possibilities. Even in the important endeavor of unit planning and construction, many are the schools that require prospective teachers to prepare but a single teaching unit in their undergraduate training period. The prospective director has but to re-examine the basic principles for using audio-visual materials and their related classroom performance in terms of his own early teaching experiences to conclude that in-service programs must be planned for both experienced and the beginning teacher. He cannot escape the goal of developing in as many teachers as possible the highest degree of competence.

HOW MAY THE GOAL OF TEACHER COMPETENCE BE REACHED?

First and foremost the director must identify the basic tasks to be accomplished. He must then relate cooperatively his own specialized endeavor to the larger stream of activity being conducted by other curriculum, administrative, and supervisory personnel. The energies of the director in this field of responsibility ought to bear directly upon teaching teachers to engage in very definite kinds of performance without by-passing in an unrelated fashion the continuous efforts of others who have even more important objectives to achieve. Quite the contrary is desirable. However, the effort to concentrate and restrict effort to audio-visual methods means that the director will have to determine needs in his own field as points of departure, and he will have to seek the help of students, key teachers, principals, and other curriculum personnel for teaching colleagues how to use audio-visual materials effectively. The director in turn will be called upon to assist others and relate his own efforts effectively to competence-building programs throughout the school system.

The title of this chapter is "Teaching A-V Skills to Teachers," and it is fully intended that the implied action be carried out within the framework of the concepts of modern supervision and good leadership. The goal of teacher competence in any great percentage of teachers in a school system will probably never be reached unless the director is firmly committed to his role as supervisor and is also committed to giving high caliber leadership. Since the process of leadership is so vital in making progress toward this goal of competence, audio-visual directors should consider some guideposts for action, Weber[6] makes the following helpful suggestions:

1. Possess a thorough understanding of the meaning of democratic control.
2. Have an up-to-date understanding of the nature of learning.
3. Be committed to democratic control, to an abiding faith in people, to the desirability of orderly change, and to the belief that leaders should be parts of groups, not external to them.
4. Approach problems in the inverse order of likelihood of produc-

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[6] By permission. From C.A. Weber, "A New Look in Leadership," *Audio Visual Instruction*, Vol. 1, Issue 7, 1956, p. 200.

ing controversy. Assume responsibility for guidance so that aspects of problems least likely to produce strong disagreements are attacked first, more controversial phases last.

5. Be skillful in making inquiry; analyzing situations; discovering attitudes, beliefs, and commitments of members of the group; discovering facts and information; mobilizing facts; and utilizing abilities of group members.

6. Seek to develop teamwork rather than compromise.

7. Guarantee that all persons involved have direct rights to participate in planning in direct proportions to their ability to foresee consequences. Seek continuously to help each individual become increasingly able to assume important roles in planning, policy making, and control.

8. Be imaginative, and be willing to assume calculated risks.

9. Seek always to become a member of the group. The most successful leaders are those who are looked upon as "one of us."

10. Develop such attributes as friendliness and promptness.

11. Be mentally and physically vigorous.

12. Develop the habit of suspending judgment until the facts are in.

13. Possess uncompromising integrity.

14. Measure efficiency in terms of purposes and goals accepted by the group.

The task of teaching and reteaching teachers in a large city is a staggering one, and many supervisors make only feeble attempts to get the job done. Other extensive efforts are unfortunately inefficient, and the time and energy spent in these instances should be redirected. To be sure, if there is an urgent need to increase the tempo of achievement, the job of building competence may well call for extra personnel and the establishment of a higher priority by all concerned.

The country-wide failure to get this job done more quickly should not be overly discouraging, but this failure needs to serve as a challenge because the youngsters in our democracy deserve the best teaching they can get, and to fail in this job may of course be more serious than is generally believed. The truth is that every director of audio-visual services needs to re-examine his time and effort budgets to seek more effective ways for reaching the teacher competency goal. In the years ahead it is bound to become even more urgent.

Because each local environment presents a situation that demands unique decisions, no one set of procedures can be prescribed, but this does not mean that there is a paucity of promising patterns for success, and several of these have already been suggested, namely, the *modern supervision* pattern and the *leadership* pattern. Also, as discussed in Chapter Two, certain essentials for expert performance have been identified and suggested as frameworks of reference. Such patterns of understanding and ability enable directors to work more effectively with teachers in any situation. Therefore the material assembled and presented in the subsequent pages of this chapter is offered as a guide to the audio-visual worker who is seeking effective ways for helping teachers acquire competence in the use of audio-visual materials.

THE SUPERVISION-TEACHING PARALLEL

The writer believes that good supervision (that is, good in-service education) is parallel to good teaching and that the good *teaching* approach is a promising one. Excellent, modern teaching technique calls for the:

1. Identification of abilities, concepts, and behavior tendencies (attitudes and appreciations) in terms of pupil needs.
2. Identification of problem-solving activities (learning experiences planned for or planned with youngsters) and the proper introduction of such activities to stimulate desire to participate.
3. Preparation of study guides, plans for action, and the accumulation of necessary materials (instructional materials and supplies).
4. Organization of the group for action.
5. Guidance of activity.
6. Evaluation of the results.

Running parallel to this line of action is the action of a good supervisor who organizes a learning situation for teachers, just as a skillful teacher organizes a learning situation for his pupils. The good supervisor of necessity must

1. Discover needs of teachers in reaching new levels of competence with audio-visual materials, and in terms of the needs, identify specific abilities and understandings which if developed will lead to the desired changes in behavior.

2. Identify problem-solving activities for and/or with the assembled teachers (learning experiences for teachers, taking necessary care in building group readiness to participate) both before and after the group has assembled.

3. Procure and present guides, bulletins, and necessary supplies and materials for the planned learning activity.

4. Organize the group for action, that is, organize voluntary committees or action teams under captains or chairmen.

5. Guide the work of individuals and groups, participate, explain, demonstrate, or arrange for this activity to be done.

6. Evaluate the results and plan for follow-up by questionnaires, bulletins, individual reports, and check lists.

Learning by Pupils and Teachers. Do teachers learn like pupils? The answer must be "yes." They, like their pupils, are learning all the time by experiencing, by overcoming some felt need, by solving some problem or deciding what to do in a novel situation. Billett[7] puts it this way, "Types of human learning do not exist. All observable differences between learning in one situation and human learning in any other situation, either in process or in product, are quantitative and not qualitative differences. Human learning is human learning. Problem-solving is the way of human learning." The same principles regarding teaching and learning ought to apply to teachers also, or the principles need revision. Perhaps this question ought also to be raised: Should teachers be taught differently? The answer must be "of course not." Capable supervisory personnel in any field should plan with teachers what some key problems are (in line with needed abilities) and then guide their work on interesting, significant learning experiences at a satisfactory pace under appropriate conditions. The following specific example shows the supervision-teaching parallel in action.

APPLICATION OF THE PARALLEL

In studying the following example, the supervisory worker should be aware of the possibility of developing a designated ability in teachers, out of context with its relationship to everyday classroom operations. Collaborating with other curriculum specialists, and placing proper emphasis during the work period with teachers on how the ability can contribute to valid educational purposes, should minimize this danger. The following supervisory process parallels good teaching:

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[7] Roy O. Billett, *Fundamentals of Secondary School Teaching with Emphasis on the Unit Method*, Houghton Mifflin Company, Boston, 1940, p. 471.

1. *The Need.* Evidence collected from personal observation of classrooms, opinions of school principals, and in talks with teachers reveals poor use of bulletin boards; hence a real need for improvement in display exists.

2. *The Supervisor's Purpose.* The supervisor therefore formulates a specific objective for achievement, *the ability to construct good bulletin-board displays.* To develop this ability in teachers, a learning situation must be organized, and the attention of teachers must be focused on the problem of how to construct effective displays.

3. *Organization of the Learning Situation.* A questionnaire is prepared by the director of audio-visual service for teachers of grades 4, 5, and 6 and sent via the school principals after consultation with the other key supervisory personnel. The questionnaire, of course, has an interesting introductory statement and carries a drawing or two. It asks teachers if they would like to study the techniques of good bulletin-board display in order to be able to guide pupils in this work as a part of significant learning activities, to submit samples of their best displays, and to volunteer to be on a demonstration team. It also asks if teachers would prefer to meet for a discussion and planning session and when such a meeting could best be scheduled, if they would prefer to work alone by reading suitable references, and if they would rather work on another problem at a later date. The summary of such reactions will determine size of group, degree of interest, and the date of the first meeting. It is now assumed for this example that a short course of three general meetings with groups working as committees on group-determined assignments has been organized, to be taught by the audio-visual director with the art supervisor cooperating.

4. *Some Learning Experiences.* The supervisor (like any good teacher) has several activities already planned, in case they are needed, and is ready to guide the planning of the group as it comes to decisions about participation. In this case it can be assumed that teachers engage in the following learning experiences:

a. They study the motion picture "Better Bulletin Boards" and the filmstrip "How to Keep Your Bulletin Boards Alive" in order to find and understand quickly the basic principles underlying good display. [See film list at end of this chapter.]

b. They follow up the observation of visuals by watching a flannel board demonstration.

c. They work by subject and grade groups in formulating a sequence of headlines for a whole year of bulletin boards in the various participating schools.

d. They bring in pictures and sketches of their own bulletin boards and engage in critical analysis.

e. They apply the principles immediately to their own classroom and school-corridor displays.

f. They study magazines, pamphlets, and textbooks and share their experiences by reporting to the group.

g. They form committees and split up the work of writing a short illustrated handbook about bulletin-board display, which they issue in mimeographed form to be distributed to every teacher in the school system.

h. Months after the experience they check off a questionnaire on the value of their efforts, and they write up descriptions of some of their best bulletin board displays constructed since their meetings for the local audio-visual department news bulletin.

That is the way the supervision-teaching parallel may look in action. When a needed professional skill is lacking, the director should feel committed to take suitable action—capable teaching of teachers who want to learn is a promising pathway of action. Experiencing, problem-solving, project-completing, and practicing the application of principles will change behavior.

At this point readers are urged to re-examine the foregoing application of the *parallel* and answer the following questions:

1. What was the point of departure for the supervisor's teaching activity?
2. What was the supervisor's teaching purpose?
3. What were the learners' purposes?
4. Was the supervisor's emphasis placed on listening or on taking action to apply and produce?
5. Under what circumstances could a supervisor have utilized a bulletin written by him, instead of a *short course*, as has been described?

6. Was the supervisor's purpose specific and achievable with reasonable time and effort?

7. Do you predict that only one regular teacher's meeting with adequate follow-up could have accomplished the objective as well?

8. What other kinds of organization could be developed?

9. How did leadership principles and the democratic conscience operate in the case described?

10. How were the principles of good supervision violated, if at all?

11. Is there a danger in the teaching of skills to teachers, i.e., that the skill may be taught apart from the framework of effective classroom activities?

The preceding point of view in terms of a method for up-grading the performance of teachers on an in-service basis seems to be supported by Miles and Passow[8] who have said:

> We believe that in-service programs can be aided measurably through attention to the improvement of the kinds of skills needed by participants. This means that the need for acquiring particular skills must become recognized, that participants and planners must be willing to take time out for training, that inventiveness during the planning stages must be central, and that efforts to secure data on the effectiveness of the training must be made.
>
> We have a generalized hypothesis which, in our view, needs wider testing: If program planners and participants give careful attention to locating gaps in the teacher's preparedness for instructional services, to planning and carrying out meaningful training experiences, and to research on the effects of the experiences, *then* the in-service program will go deeper and farther, and educational experiences of boys and girls will be improved.

MASS PRODUCTION OF COMPETENCY

Common agreement that one of the main functions of the audio-visual specialist in any school system is to assist teachers in using the materials effectively has been already pointed out. It is also known that even in the largest audio-visual centers, staff for concentrated in-service education work seems to be at a minimum; of course if staff members were plentiful, the problem of getting the time and attention of teachers who need to be helped would still be ever present. Furthermore, as one director said, "My materials are scheduled now at the maximum amount my staff can package and deliver." This means that he was afraid that were he to spend time on teaching skills, the demand for even more materials would result, and this would disturb the balance of his present output. Such fear should not be allowed to deter action on such a vital matter as competence. Yet the principal goal is to achieve maximum competence with audio-visual materials in the maximum number of teachers in the shortest possible time. This principle demands action despite the serious obstacles that exist everywhere. This is why the author raises the question: *Is a mass program for competency possible and feasible?* That is, must the in-service program be carried forward at a snail's pace, inching forward painfully for twenty years, or could methods be developed to teach basic abilities and develop understanding of fundamental relationships on the part of every teacher in five years or less?

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[8] By permission. From Matthew B. Miles and A. Harry Passow, "Training in the Skills Needed for In-Service Education Programs," *In-Service Education for Teachers, Supervisors, and Administrators,* 56th Yearbook of the National Society for the Study of Education, Part I, The University of Chicago Press, Chicago, Illinois, 1957, pp. 366–367.

As this concept is explored, the director needs to bear in mind his coordinate relationships with all other curriculum personnel in his local school system. He must recognize the complexity of a situation in which others are as zealous as he is in reaching competence objectives for which they are responsible. Hence, competence in the classroom use of audio-visual materials needs to be examined in relation to other professional needs, with all necessary steps being taken for the cooperative planning that will assure optimum balance of effort and achievement. The need for system-wide curriculum development on the one hand and a need for analysis of such specific though basic aspects of teaching as unit planning and pupil guidance programs on the other, may, because of a higher priority, postpone or decrease the tempo of mass programs, regardless of their desirability. The crucial factor in the eventual success of the type of program about to be explored is that it be accepted as a part of the general program for professional growth and that those who are to be affected by it participate in all related decisions.

Assuming the general conditions for acceptance, the writer believes that a mass program for competency, with the tempo optimally established by the local situation, becomes a promising possibility. At any rate the director ought to consider the valuable lesson to be derived from a study of the proposal, namely, the potential effectiveness of group methods. The broad outlines of a mass competency development venture are as follows:

Condition 1: Provide adequate leadership, sufficient clerical and technical personnel to carry on the routine services of the service center.

Condition 2: Develop an incentive system based on in-service education credits for salary purposes for all participants, including some time off from classes, awarding a diploma, entry in personnel records, etc.

Condition 3: As a result of careful system-wide planning, set up a base of six major abilities as follows:

a. How to formulate valid teaching purposes
b. How to find and choose audio-visual materials
c. How to build readiness for materials
d. How to control equipment and physical facilities
e. How to guide participation of learners during or after the use of materials
f. How to evaluate the material and accompanying techniques.

(See statement of guiding principles in Chapter Two. This statement could be expanded or narrowed down.) Identify the basic abilities and allow choice of participation according to need.

Condition 4: Prepare the staff by appropriate announcements for individual participation in filling out a specially constructed, personnel, A-V, skill-survey sheet to get full data about skill status. The announcements should be signed by the organizing group, including teacher representatives. Summarize the data and discover both the needy and the competent. Seek services of the latter as teachers of others.

Condition 5: Make participation voluntary on three levels of activity: (1) as a member of the steering committee, (2) as a teacher demonstrator, or (3) as a learner. Get consensus, but also do an appealing and challenging job of communication.

Condition 6: Enlist the help of student equipment operators, school-building coordinators, other curriculum personnel, and school principals in building up a corps of teachers. The selected so-called training teachers, including the director of the audio-visual service center, participating curriculum specialists, and a few carefully selected classroom teachers would on a given day teach the school coordinators, principals, and other qualified teachers. These in turn would hold scheduled (by consent and planning) meetings for their respective school staffs, using the same procedures and kits of material supplied to them in the previous "training" meeting. The "training teachers" could therefore conceivably hold a meeting for a group composed of school-building representatives, that is, twenty or even a hundred principals, coordinators, talented colleagues from elementary or secondary schools in any combination, with the agreement that during the next two weeks each of these representatives would conduct meetings, clinics, or laboratory sessions (skill-building sessions) in their schools for their own volunteer colleagues. This procedure could then continue on schedule according to plan.

Condition 7: The next year a new group of volunteers for this experience could be met by a new corps of volunteer teacher assistants, using the plans and kits from earlier meetings.

Condition 8: Bulletins reporting news of the venture, aspects of progress, names of participants, schedule of group meetings, special speakers, dates for PTA-sponsored coffees for the group, and the like, would be a necessity.

Condition 9: Maintain an adequate record system to note completion of planned schedules and of specific contributions.

Thus, long-term plans backed up by careful preparation, financial support, full cooperation of administrators, principals, teachers, supervisors, with some staff members being taught and others helping to teach colleagues could facilitate the mass production of competency. Group processes provide the most fruitful technique. Individual visits and follow-up conferences, especially when requested by the teacher, are quite productive but are geared to a slower pace. Efficient group processes may be greatly facilitated by television whenever facilities are available. In such cases the director ought to explore the possibility of organizing telecourses with laboratory and discussion groups for follow-up, utilizing talented volunteer staff.

Who knows whether such a mass production of competency scheme as outlined would work? Whether tried on a 100 percent basis or not, prospective directors would do well to give such a plan strong consideration. One point is clear. It is a little strange that many a city-system audio-visual director has taught college and university audio-visual education courses on a campus fifty miles away but has no course for his own staff in his own school community. The same amount of effort as expended on a campus teaching assignment, if applied to a plan as just described, would work wonders. The idea contained in Condition 6 deserves special attention because the group instruction technique, using teams of teachers to teach school-building representatives for the specific purpose of repeating the instruction at the local school-building level, is promising indeed. When the author visited the Instructional Materials Center of the San Jose city schools in California, the center's director was carrying forward a series of meetings that resembled this plan closely. This is the technique that can achieve *mass production of competency*. "Go Slow" is certainly good advice, but this being a completely relative term, it should not be allowed to become a deterrent for developing readiness to participate, for mobilization of resources, for planning, for leadership, and for the successful action that ought to have been taken.

THE DIRECTOR MUST WORK WITH AND THROUGH OTHERS

The director of audio-visual services who feels that he has to work alone at his job of in-service growth of teachers will get nowhere. Only by teaching others or finding willing individuals already capable enough to help accomplish valid objectives, and by working effectively with and through other key supervisory personnel, can he hope to be successful. Such working relationships need to be clarified.

Top Administrative and Supervisory Personnel. For most effective service the audio-visual specialist should be on a coordinate working basis with other supervisory personnel. He is most frequently responsible to the assistant superintendent in charge of instruction, if there is one; otherwise he is responsible to the school superintendent. It is vital that the audio-visual specialist meet with curriculum and administrative planning groups to report needs as he has discovered them and to make recommendations for action. In proposing large-scale programs for in-service growth, such plans need to be introduced far in advance to secure high priority for action, integration of action with other programs, and cooperation by all concerned. Such contacts and working relations are important, not only for in-service aspects of his work but also for all other phases of his plan for audio-visual services. Directors who are involved in regular advisory council meetings, weekly administrative report-type meetings, and other kinds of staff meetings indicate that these clearing houses for action are invaluable. Some audio-visual specialists in public school and county systems go so far as to rely entirely upon the work of other curriculum specialists for their in-service education meetings. Again, the history, conditioning, and status of each individual situation will have to be accurately surveyed as a basis for decisions in these or any other matters of policy.

School Principals. Because they are "key" administrative and supervisory officials in school-building units, full support on the part of school principals for the entire program of audio-visual services is fundamental to the director's success. The audio-visual specialist must therefore take the necessary steps to work with and through them in all matters involving their school staffs, plant, and equipment. It is the principal who will arrange for release time for the audio-visual building coordinator, who will arrange for the time and agenda for a needed teachers' meeting, and who will be expected to insist on having a voice in policies governing the flow of instructional materials and equipment into his school. It is urgent that the audio-visual specialist put his department at the disposal of school principals for expert advice and service relative to their public relations projects, including graphic production services, building equipment service, and assistance in programming meetings for their Parent Teacher Associations, or for other civic groups involved. It is urgent also that the director of audio-visual services pave the way for working directly with school-unit coordinators, that is, in assigning duties and planning with them their service roles for the building. For example, it is obvious that if the building audio-visual coordinator is going to conduct a meeting or a laboratory session as a part of the in-service education program, he will not proceed without the full knowledge and direction of the principal. It should be remembered that the school principal has direct control over his staff, including teachers, librarians, and custodians, all of whom may contribute useful services to the audio-visual specialist in large-scale in-service education programs. This calls for in-advance planning by the director so that proposed action will take place at the direction of, or with the knowledge of, or by order of the principal. Meetings and conferences for school principals, special letters, bulletins, simple notices, copies of schedules, and arrangements sent to them in ample time, and the mutual formulation of policies are techniques that will in most cases need to be employed.

ORGANIZING LEARNING SITUATIONS FOR TEACHERS

As has been pointed out, the process of improving competence with audio-visual materials is not a mysterious affair. Shotgun methods hold out little hope. Teachers, like pupils and everybody else, have no inside track on learning. The simplest statement that can be made is that—in terms of time, energy, facilities, and teacher incentives—the audio-visual specialist must arrange for teachers to engage in worthwhile, carefully chosen, skill-building learning experiences. Before proceeding with discussions relative to organizing learning situations for teachers, it is suggested that a closer look be taken at some learning activities with a potential for not only building competence in the use of audio-visual materials but for many other kinds of competence as well.

Experiences for Teachers to Engage In. Planners of in-service education programs need to know what kinds of activities may be useful as vehicles for developing the desired understanding and ability. The author suggests that teachers may be encouraged to participate in one or more of the following under appropriate conditions:

1. Study published literature, pamphlets, and textbooks.
2. Read locally produced manuals, handbooks, curriculum guides, and case studies.
3. Plan, write, and/or edit a handbook or bulletin of directions; write up a case for publication and distribution.
4. Prepare and give a report.
5. Prepare and give a demonstration.
6. Produce audio-visual materials.
7. Watch demonstrations.

8. Listen to speakers.
9. View presentations of audio-visual materials.
10. Evaluate audio-visual materials.
11. Write detailed teaching plans and teaching units.
12. Evaluate teaching plans, case studies, and teaching units.
13. Formulate basic principles and apply them.
14. Act out a dramatic role.
15. Observe other teachers at work.
16. Take field trips.
17. Evaluate experiences of self and others.
18. Plan and conduct a research experiment.
19. Teach other teachers.
20. Follow directions.
21. Conduct surveys.
22. Participate in a discussion.
23. Formulate valid teaching purposes.
24. Formulate good thought-provoking questions.
25. Fill out questionnaires.
26. Operate equipment and handle materials.
27. Plan programs for meetings.

The preceding learning experiences are, of course, generalized in nature. Each may be stated in specific terms as soon as the ability toward which the action is to be directed becomes known. (The reader is referred to specific examples under one of the preceding sections, "Application of the Parallel.") Additional examples of generalized experiences stated in terms of specific objectives will appear in the subsequent pages. Such experiences are the pathways to learning, but teachers won't engage in these activities by themselves, that is, not many will; so, the question needs to be asked: "What are the learning situations in which such experiences may be carried on in proper relation to definite classroom problems? This question is answered in the following descriptions of seven basic learning situations: regular teachers meetings, extension classes, short courses, workshops, institutes, reading programs, committee and individual service projects.

Regular Teachers' Meetings. The simplest of the learning situations to organize is the regular teachers' meeting. Despite their long tradition of boredom, the capable audio-visual director can find ways

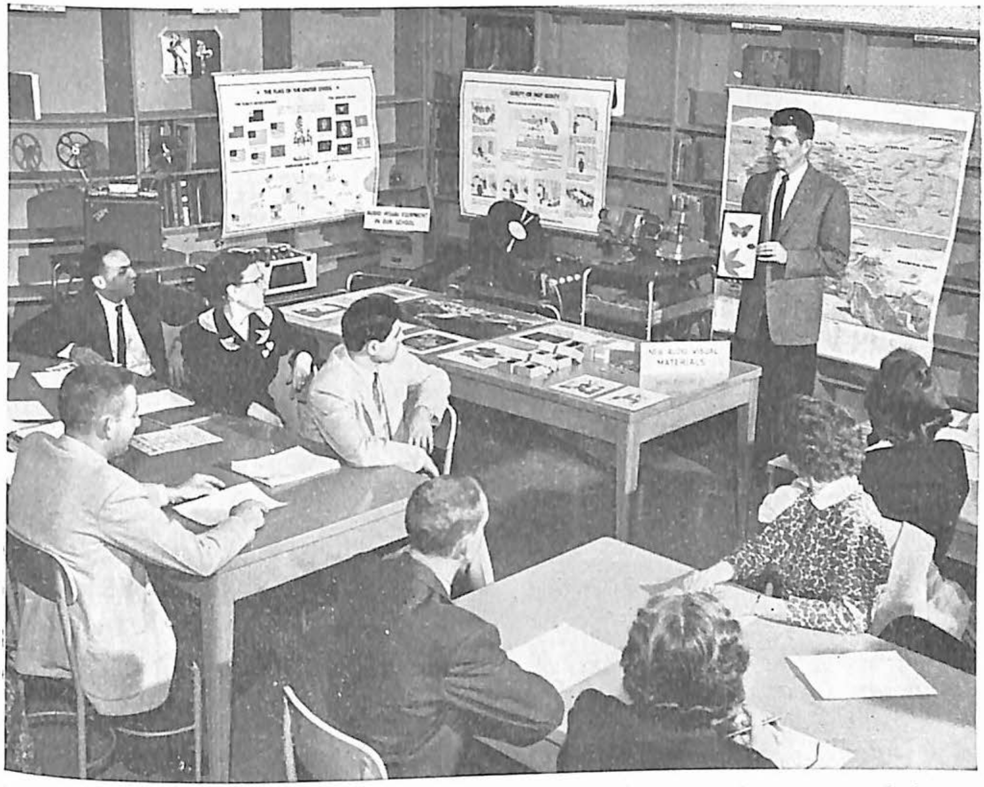


Fig. 3–2.* More well-planned and organized teachers' meetings are needed in schools everywhere. *(Courtesy Los Angeles City Schools.)

to revitalize them. The leader for the audio-visual in-service education program should heed the basic principles of learning and teaching, should apply good principles of leadership to both arrangements and content, and of course he must search for ways to eliminate the disturbing flash of knitting needles as they pick up the late afternoon sun. One of the advantages of regular teachers' meetings is the help that can be given by the principal in organizing them. The difficulty is in organizing short, significant activities that can take place within the time allotted. Since the regular teachers' meeting implies all teachers in a school, or group of schools, the supervisor's objectives will have to be set up accordingly. Certainly no activity in a meeting should concern a limited group while others sit idly by until adjournment. Some directions for the supervisor to follow are:

Fig. 3–3.* Learning how to operate equipment is an interesting teacher activity, but other more professional skills need continuous emphasis. *(Courtesy Los Angeles City Schools.)

1. Concentrate on a specific objective.

2. Plan activities around identified needs. Set up appropriate problems: What is the nature of? Why? How to plan, construct, use, or formulate. Prepare a brief study and activity guide, or at least an agenda sheet with planned problems on it.

3. Continue action of the meeting through work by individuals or committees, to report later, or to complete a project.

4. Try to run the meeting into a series or on into a new set of related problems for volunteers.

5. Keep people awake by personal activity.

6. Give full credit for accomplishment of participants.

7. Get follow-up summary sheets out on the specific performance planned, discussed, demonstrated, or developed through the laboratory activity.

8. See to it that the people in charge of the meeting (principal, audio-visual building coordinator, teacher, or other supervisors) plan cooperatively for selection of capable participants and appropriate activity.

9. Communicate effectively through graphics and other visuals at every opportunity.

10. Develop adequate readiness on the part of teachers by group participation in program plans, through brief check lists, announcements, brief case studies sent out in advance.

11. Make every minute count, and adjourn on time.

12. Carry out similar meeting plans, where possible and appropriate, in other schools to economize on time and effort.

13. Take precaution in the planning-stage of the program that administrative details and announcements do not interfere seriously with the allotted time schedule. Arrange with the principal to have the committee chairman take charge of the meeting from start to finish.

14. Provide materials and facilities, and limit the activities to be carried out in terms of group size and available time.

The following example of a specific objective and a list of suggested learning experiences that might lead to the accomplishment of the objective, using the regular teachers' meeting as the situation for learning, is now presented for critical appraisal.

Example

The Objective: To develop in teachers the ability to build pupil readiness for the use of audio-visual materials.

Suggested Problems and Activities to Achieve the Objective:

1. Teachers listen to a short orientation talk by the building A-V coordinator, which raises several critical questions: Why ought we to pay careful attention to readiness plans? What are some highlights of our experiences here in this school? What are some firm guideposts for help in deciding what to do or say?

2. Three teachers give prepared reports to the group, to answer each of the questions. The second question is answered on the basis of a teacher survey for highlights given without names. The third question is answered by using a large chart with contributions of possible examples being given by teachers from different subject-matter fields and for different kinds of audio-visual materials.

3. Upon the invitation of the principal a group of volunteers agrees to prepare a brief bulletin on readiness for A-V experiences, with examples from different grade levels and from subject-matter fields, with the A-V coordinator as editor, for distribution to all teachers in the elementary schools.

4. Before adjournment, teachers agree to *write up good examples* during the next two weeks for submission to the bulletin committee. (Readers should refer to the listing of previously presented generalized learning experiences for clues to additional specific activities.)

Other more complicated plans could have evolved. A decision might have been made to devote another meeting to the survey and improvement of teachers' ability to formulate valid purposes in relation to the improvement of teaching plans. Another turn of events might have created the need for: an analysis of the kinds of problem to which students were being led to devote their efforts, possibly resulting in a set of criteria for evaluating problems; a plan for teachers to compare and evaluate sets of problem-solving activities; and a teacher-produced bulletin on the contributions of motion pictures, filmstrips, and study prints to the completion of problem-solving activities. A few other objectives that seem to be particularly appropriate for regular teachers meetings are the following:

TO DEVELOP IN TEACHERS THE ABILITY TO:

1. Make improved chalkboard illustrations
2. Evaluate sponsored materials
3. Use the feltboard
4. Give demonstrations
5. Use study prints effectively in the teaching process
6. Construct charts
7. Construct letters for display purposes
8. Plan and conduct field trips.

Extension Classes. It is not uncommon for city school districts to pay course fees for teachers who enroll and complete specified university extension courses satisfactorily. Middletown, Connecticut, authorized its director of audio-visual services to select teachers to serve as audio-visual building coordinators and then to arrange for them to take a basic course in audio-visual education, with the city reimbursing the teachers in full for books and course fees. The mental calisthenics of good extension courses in audio-visual education may, if properly oriented to local problems and situations, stimulate teachers to develop increased professional skill. Supervisors may make a great mistake, however, if they assume too much and fail to follow up the course work. They may make an even greater mistake if they fail to take a keen interest in the plans and activities of such courses. Directors of audio-visual services should certainly encourage teachers to get help through formal courses and should facilitate arrangements for local course offerings according to a long-term plan. While "kill or cure" is not wise treatment, interested directors should seek to arrange through conferences with course instructors for stimulating activities to be organized and completed during a semester's work. If this is done, the director will build up in the process a cadre of helpers for in-service education programs, made up of individuals who can penetrate deeply to underlying principles and values and who have the broad, over-all view of the field that is so helpful in planning city-wide programs.

Some of the learning experiences, in addition to those that serve purely local needs, that the local director should encourage in extension courses are the following:

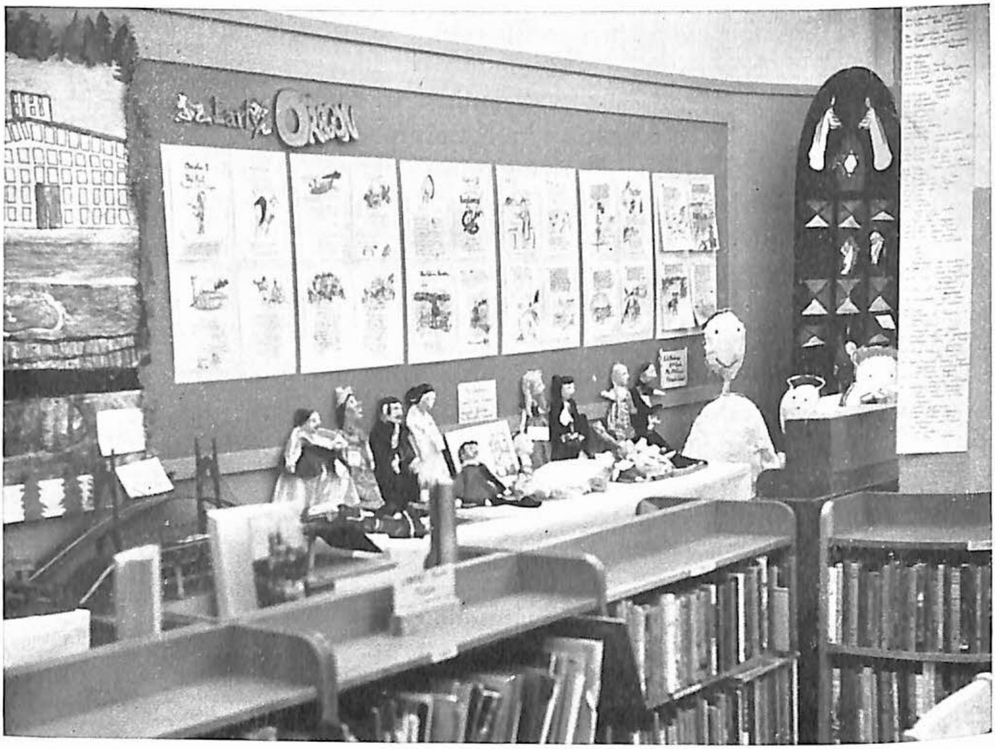
1. Study and application of basic principles in classroom plans
2. High caliber planning and writing
3. Analysis of contributions of audio-visual materials in the learning process
4. Evaluation of plans and materials
5. Penetrating thought about the teaching and learning process
6. Production of audio-visual materials
7. Analyzing barriers to communication
8. Analyzing own teaching competence.

Above all, the director of audio-visual services should seek ways of putting to work the newly developed talent in his school system.

Extension courses provide a unique situation for developing high-level ability, unique because they proceed with an expenditure of minimum effort on his part through a series of concentrated learning experiences.

Short Courses. Not so involved as a workshop, specific in its appeal to interested people, and easy to organize and implement, the short course as a learning situation for teachers merits careful consideration. The inexperienced director may well feel that the short course offers an ideal way to get started, especially if the topics and objectives are in line with his own special interests. Careful planning in advance makes possible the prediction of time to be devoted to the course, and conceivably anywhere from three to ten sessions will be feasible. However, the term *short course* implies a specific interest-group ready

Fig. 3–4. Portland's Instructional Materials Center includes an extensive Curriculum Laboratory for in-service education. *(Courtesy Portland, Oregon, Public Schools.)*



for study, laboratory, or homework. Local needs will influence decisions; however, busy teachers will be more likely to volunteer for courses of short duration. A few objectives (supervisors' purposes) that seem appropriate for the *short course* learning situation are the following:

TO DEVELOP IN TEACHERS THE ABILITY TO:

1. Construct good bulletin-board displays
2. Operate and use a tape recorder
3. Produce handmade slides
4. Formulate valid teaching purposes.
5. Operate the audio-visual equipment available in the school
6. Produce graphic transparencies
7. Construct exhibits and dioramas
8. Use instructional motion pictures effectively
9. Produce radio programs
10. Produce motion pictures with magnetic sound tracks
11. Take good pictures for teaching purposes
12. Select and teach map interpretation
13. Select and use filmstrips effectively
14. Operate and use "short-exposure" equipment effectively (in any field where this procedure is appropriate)
15. Write scripts for the production of audio-visual materials.

When such objectives as the above are identified, appropriate learning experiences may be planned by the supervisor for or with the teachers who are interested in participating. An example of specific learning activities appropriate for the *short course* situation was given earlier in this section under the heading "Application of the Parallel." The example referred to described possibilities for the objective of developing ability in teachers to construct good bulletin-board displays.

It should be noted that the emphasis is placed upon a definite ability so that appropriate learning activities can be selected. Readers should also be aware of the implication that just learning about some process is not enough. Nothing said or implied by this emphasis should be construed as favoring a decrease in responsibility for using democratic methods and high-caliber leadership processes. The lowest common denominator is skillful teaching technique directed toward the accomplishment of desirable outcomes in teachers as a route to better learning on the part of everyday pupils.

With few exceptions, the same directions given earlier for conducting good *teachers' meetings* apply as well to the organization of good *short courses*.

Workshops. The author was speaking one day at a three o'clock teachers' meeting. Three other speakers were on the same program. The superintendent of schools and the person in charge of the audio-visual services program in getting the meeting started referred to it as a workshop. Somehow they had missed the point of workshops completely and were actually conducting nothing more than a thoroughly bad example of a regular teachers' meeting. Institutes, conferences, lectures, and committee meetings are not workshops. The term *workshop* must not be applied indiscriminately. Burton and Brueckner[9] say:

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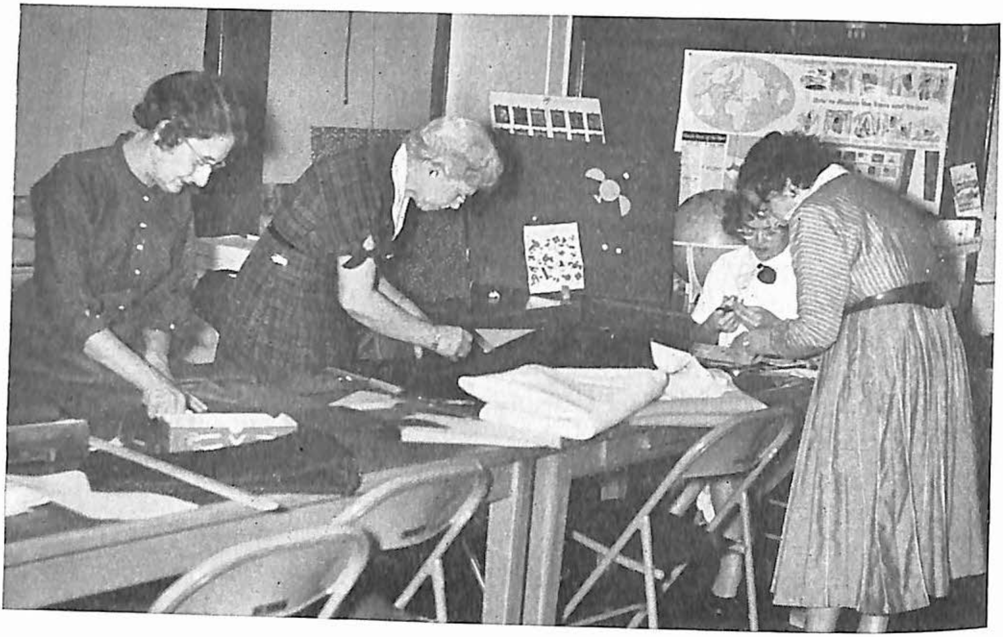
[9] Wm. H. Burton and Leo J. Brueckner, *Supervision a Social Process*, 3rd ed., Appleton-Century-Crofts, Inc., New York, 1955, p. 147.

Fig. 3–5. Teachers are developing A-V abilities in this feltboard workshop. (Courtesy Kalamazoo, Michigan, Public Schools.)



> A workshop is just what the name implies, a shop in which work is accomplished. This meaning was in use for centuries by artisans and craftsmen and has been applied in modern times to university offerings in which objectives are original production and the development of the abilities of the participants. . . . The crux is productive work in contrast to listening to lectures . . . workshop emphasis is upon the production of end results useful to the participant and desired by them. A second emphasis is upon the personal social development of participants as they work with others on common problems. . . . The workshop utilizes the principles which should be used everywhere in teaching; readiness, personal and social needs as motives, cooperative and participatory process, experimental procedures. . . . Workshops are problem-centered.

DeBernardis[10] puts it this way:

> The audio-visual workshop offers a great deal of promise as a technique for in-service education of teachers. It gives teachers an opportunity to work on individual problems, it allows for flexible schedules; it helps to develop a co-operative work spirit; it provides for more individual guidance; and it helps develop a better attitude toward audio-visual materials. The essential requirements are:
>
> 1. A group of teachers who have specific problems on which they want help
> 2. A capable leader to direct the workship
> 3. Enough resources (materials, equipment, consultants) to meet the individual and group needs
> 4. An adequate work space.

Since the workshop holds so much promise as a learning situation for teachers, and since the term has unfortunately been extensively misused, the student should be guided by the following directions stated by Burton and Brueckner:[11]

> (1) The length of the session must be adequate. . . .
>
> (2) The collection of resource materials of all kinds likely to be of value to participants should be as extensive as finances permit. . . .

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[10] By permission. Amo DeBernardis, "In-service Teacher Education," *Audio-Visual Materials of Instruction*, 48th yearbook of the National Society for the Study of Education, Part I, The University of Chicago Press, Chicago, Illinois, 1949, p. 117.

[11] By permission. From Wm. H. Burton and Leo J. Brueckner, *Supervision a Social Process*, 3rd. ed., Appleton-Century-Crofts, Inc., New York, © 1955, pp. 148–150.

(3) The staff should represent a wide diversity of personnel.

(4) The full-time staff may be based on the ratio of one staff member for each 12–15 participants. Some of the specialists may be on a part-time basis. . . .

(5) The physical facilities should permit varied experiences. . . .

(6) The over-all purpose must be clearly defined.

(7) The specific problems of the participants must emerge and be defined without pressure or steering from above. . . .

(8) Tentative and flexible grouping may be made around common problems.

(9) The process of the workshop is co-operative and participatory throughout. . . .

(10) The personal and social growth of the individual participants should be provided for as well as their growth in the solution of professional problems. . . .

(11) The physical facilities should be adequate. . . .

Supervisory objectives of broader scope, such as the following, are suggested as being particularly appropriate for the *workshop* learning situation:

TO DEVELOP IN TEACHERS THE ABILITY TO:

1. Organize teaching-learning activities around the production of audio-visual materials.
2. Apply basic principles for utilizing audio-visual materials.
3. Make effective use of community resources in teaching.
4. Construct valid teaching units.
5. Communicate effectively over television.
6. Communicate effectively over radio.
7. Construct models for teaching purposes.
8. Communicate effectively with audio-visual materials.
9. Operate equipment and use short-exposure techniques (in all fields where procedure is appropriate).

Once more using the list of generalized learning experiences presented earlier, a wide range of specific learning activities, organized around problems defined by the participant, could be suggested for each of the foregoing supervisory objectives. An example will make this clear. (Directors should understand that learning activities are to be set up with the group, not imposed upon it or assigned to it.)

Example

The Objective: Organize teaching-learning activities around the production of audio-visual materials.

Suggested Problems and Activities to Achieve the Objective:

1. Study magazine articles, booklets, and other references describing cases of joint pupil-teacher production of films, slides, dioramas, and models as an organizing center for learning to answer the question: *What unit structures were used if any?*

2. Examine source units from own and other school systems to find the answer to the question: *What changes need to be made in our present unit organization techniques* if we use a large scale production project as a focal point for organizing learning activities?

3. Formulate lists of suitable production projects for various grade levels to answer the questions: *What are the possibilities for significant learning experiences for children?* How can small scale production projects be incorporated in present teaching units?

4. Collect samples of direction sheets that have been prepared for pupils in other cases and places to find out: *How can time and energy on production details be kept from overpowering the efforts to gain insight and concepts on the part of pupils?*

5. Watch demonstrations of scriptwriting technique to find out: *How to write picture and narration scripts.*

6. Practice operating cameras, projectors, and tape recorders to answer the question: *How difficult is it to teach youngsters how to operate the equipment for production?*

7. Work with volunteer groups on preparation of a set of bulletins for wide local distribution on the following topics:

A New Bonanza of Learning Activities
Hollywood Comes to School
Learning by Producing Exhibits
Slide and Tape Production
Better Communication Skills for Students
  Through Radio and TV Production
Two-way Dramatics for Learning

8. Preparing and giving reports to the group to provide information for solving these problems: *What will be the cost to produce a*

schoolmade movie? A typical three-panel exhibit? Set of sound slides? What are some pitfalls in the production method?

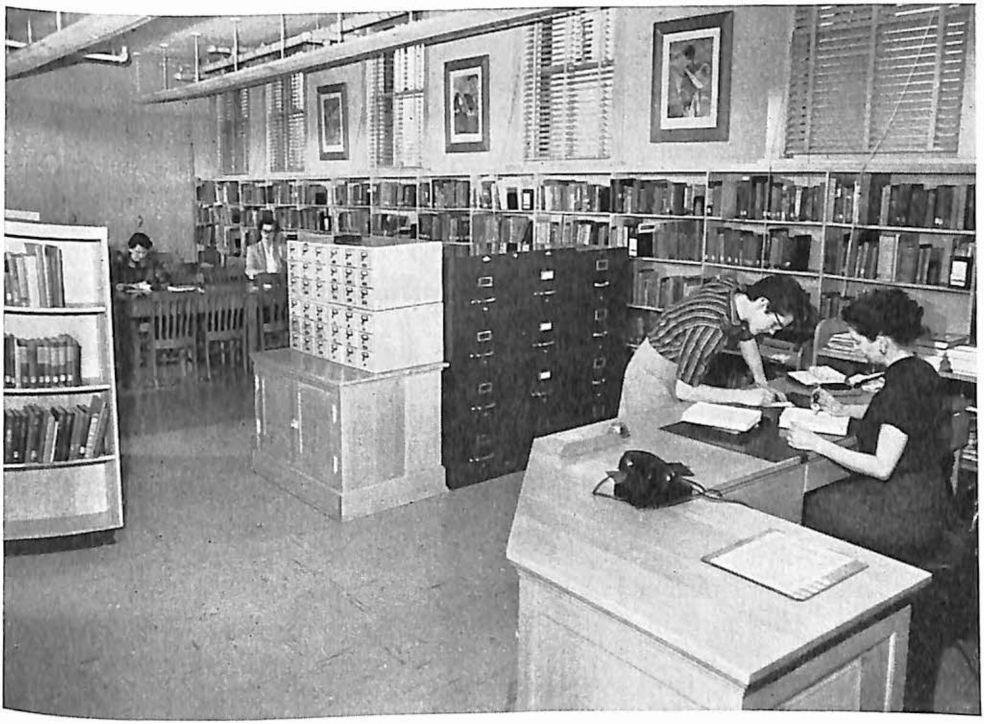
9. Working in groups to write a teaching unit for a particular grade level and unit to find out: *How to organize learning activities around a production project in my field.*

Many more problems and activities without limit could be defined and carried on in terms of time, staff, interest, and financial support. Such a workshop could actually develop a corps of talented leaders, ready to show by example what can be done to enliven classroom practices, and possibly to assist in other workshops as they are organized as teachers and leaders.

Institutes. Whether fifty, five hundred, or five thousand teachers are gathered together, whether the conference or institute is organized on a city-, county-, or state-wide basis, the chances are that emphasis will be upon *learning about something* instead of *learning to do something.* However, much improvement has been noted in recent years. Emphasis on better communication and upon action rather than exhortation has induced conference and institute planners to organize clinic sessions, so-called interest groups, and even work groups. Also, institutes have been lengthened out from a half-day to a full day, and schools now are frequently closed to free the teachers from local cares. But long, concentrated, tiring, "broadside" sessions are relics of the "twenties and thirties" when school people flocked by the thousands to state-wide conferences to find out what *visual education* was all about. However, some directors of audio-visual services, especially in recently formed organizations, still find that much interest can be built up by a large group gathering where teachers have ample opportunity to attend several work sessions of their choice after an inspirational keynote speech. The work of planning, staffing, and implementation of such an institute must be painstakingly done, and the opportunities for follow-up must be seized upon, or the teachers and pupils might just as well have stayed in their classrooms. Since teachers have had so much direct experience with institutes and their shortcomings, the audio-visual supervisor should be forewarned to make every minute as interesting, provocative, and filled with action by participants as is possible. In his planning, the supervisor should get the history of such activities in his locality from his colleagues and should get all possible teacher participation in setting up the program.

Reading Programs. Study of professional references constitutes a learning situation of rich potential for individual growth. Some cities at great expense provide centralized professional libraries, curriculum laboratories, and curriculum publication production centers. The director of audio-visual services in city systems where such services are offered will need to find ways to guide teachers along short cuts to vital reference material in terms of well-defined needs and specific problem situations. In the absence of central and well-developed professional library services, the supervisor will have to set up his own library of references at his headquarters and to set up a library of

Fig. 3–6. This is a view of Portland's professional library, an integral part of the Instructional Materials Center. ***(Courtesy Portland, Oregon, Public Schools.)***



selected references in every school building. Publicity about the availability of such references is, of course, of prime importance. The director may also arrange for regular school libraries to provide a professional section where magazines, pamphlets, textbooks, and research monographs may be displayed.

Such services, while valuable in the author's view, will not make maximum contributions to in-service education goals until teachers are led to discover their needs, until teachers define a problem for themselves and take the kind of action where new responses are called for. Therefore directors of audio-visual services and their supervisory assistants need to stimulate desired work-type reading by:

1. Reviews of recommendations growing out of staff meetings, sent out as brief bulletins.

2. Newsletters to teachers, reporting summaries of interesting experiments, or reports of activities tried locally and elsewhere with good results.

3. Statements summarizing school-system survey results, revealing problems considered by teachers to be important and needing concerted effort.

It is certain that the most reading and study by teachers is likely to be done in *case studies, handbooks, how-to-do-it bulletins,* and *illustrated guide sheets for specific skills* that provide short cuts to job success. For example, the following titles, if needs were indicated by teachers, would make contributions to the improvement of implied teacher performance:

How to Make Good Physical Arrangements for Using Audio-Visual Materials
How to Make Good Tape Recordings
How to Mount Study Prints
How to Make and Use Puppets
How to Write Dramatic Skits
How to Prepare Illustrated Direction Sheets for Students
How to Write Scripts for the Production of Radio, Television, and Motion Pictures
How to Embed Objects in Plastic
How to Plan, Conduct, and Use Field Trips

Probably the most outstanding example of a profusely, dramatically illustrated teachers' handbook of this type that the writer has seen to date is the publication entitled *Meaningful Audio-Visual Experi-*

ences, prepared by the Division of Instruction, Pasadena, California, City Schools in 1956. A system-wide committee of thirteen, a chief editor and two assistant editors working under the direction of central staff members, including the head supervisor of Audio-Visual Service, turned out at no little expense a powerful instrument for promoting and guiding the use of audio-visual materials. Its content is basically graphic, with several two-page photo spreads, and its appeal is, of course, immense. The Contents of this handbook lists the following topics: Projected Material; Tape Recordings; Recordings; Room Environment; Study Prints and Illustrations; Specimens; Models and Replicas; Charts and Graphs; Maps; Bulletin Boards; Exhibits and Displays; Felt and Magnetic Boards; Chalkboards; Dramatized Experiences; Demonstrations; The Audio-Visual Department; Operation and Care of Equipment; Teacher-Pupil Made Visual Aids; and How to Use Motion Pictures in Teaching.

Thus, on the director falls the burden of planning, writing, and editing publications for distribution to teachers. Publications of this nature, however, can have such a tremendous impact upon improvement of teacher performance that their production is a prime necessity. How the publication production-load carried by the director of audio-visual services may be lightened, short of employing assistants to do the job, is shown by implication in the next topic.

Committee and Individual Service Projects. It has already been shown in earlier examples, described under regular teachers' meetings, short courses, and workshops, that one of the routes to significant understanding and ability on the part of teachers is the actual planning and writing of case studies, manuals, guide sheets, source lists, units, and how-to-do it bulletins by interested groups of teachers or by individuals. Such activities, if correlated with a plan for production of publications, could make a real contribution to in-service education and could lighten the burden for such writing on the director of audio-visual services. However, the completion of service projects by committees and individuals may take place quite outside the framework of a specific meeting or workshop. Hence *committee and individual service projects* constitute a learning situation worthy of careful consideration. Many such service projects have only limited application, but again, if the audio-visual supervisor is ready with needs and problems needing attention, coordinators and principals may be in a position to guide teachers into writing and compilation

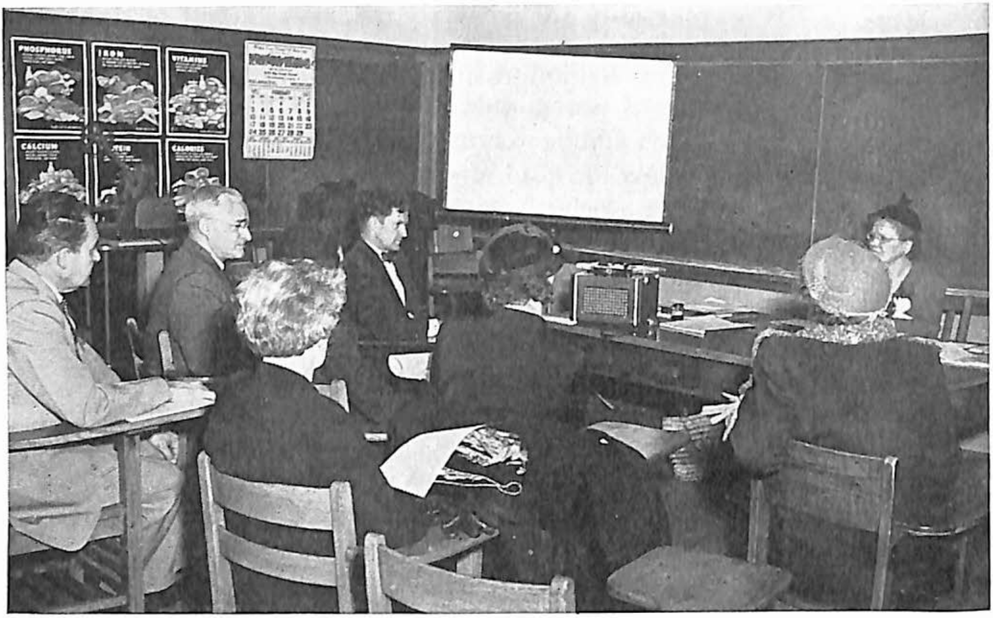


Fig. 3–7. **This teacher committee is at work on a tape-recording project.** ***(Courtesy Kalamazoo, Michigan, Public Schools.)***

projects that could be duplicated and distributed throughout elementary or secondary schools or both. Certainly ways could be found to give special credit and recognition by school officials. Ways could also be found to spread this work out among different groups. Such production of needed publications could conceivably mount up in a five-year period to a sizeable contribution.

An example of the great achievement possible is the one-inch thick, illustrated, mimeographed *Study Trip Handbook* for the San Jose, California, Unified School District, prepared by a committee of twenty-five teachers, principals, and central staff workers, working under the guidance of the Supervisor of the Division of Instruction Materials. This handbook, also referred to as *Curriculum Monograph No.* 82, has the following Contents:

Section I	General Information Foreword Study Trip Procedure

	What is a Study Trip
	Authorized Trips
	Safety Regulations
	Arranging for a Study Trip
	Procedure for Planning a Trip
	Pupil Preparation
	Taking the Trip
	Follow-through
	Evaluation
	Suggested Places to Visit by Grade Level
Section II	Study Trips to Business and Industry
Section III	Study Trips to Community Agencies
Section IV	Study Trips to Historical Locations in Santa Clara Valley
Section V	Nature Study Trips
Section VI	Resource People
Section VII	Walking Study Trips in and About each School

The committee certainly must have taken great pride in accomplishing such a useful service project for a city with 27,000 pupils, and one that is currently using twelve of the city-owned school buses five days each week for field-trip purposes alone. A well-stated "Foreword" in this handbook, written by the Assistant Superintendent of Schools, added a fine touch of dignity and importance to that valuable contribution to in-service education.

Establishment of a master plan of needed publications in terms of priorities; organization of study and writing teams or individuals, cleared through principals, other supervisors, and coordinators; enlisting the cooperation of qualified teachers in getting editorial work done; use of student typists; and the coordination of clerical supplies; all are some of the essentials for success.

Shoddy work and irresponsible editing would kill the value for distribution of such publications, and hence a good precaution to take would be to supply all workers with a simple, brief bulletin on format, and then to procure a small reviewing board of teachers that would either accept a bulletin for wide distribution or return it for further editing. An unwieldy, top-heavy organization could also kill the flow of production; so, only when the volume increases beyond the capacity of the supervisor to handle it personally should he ex-

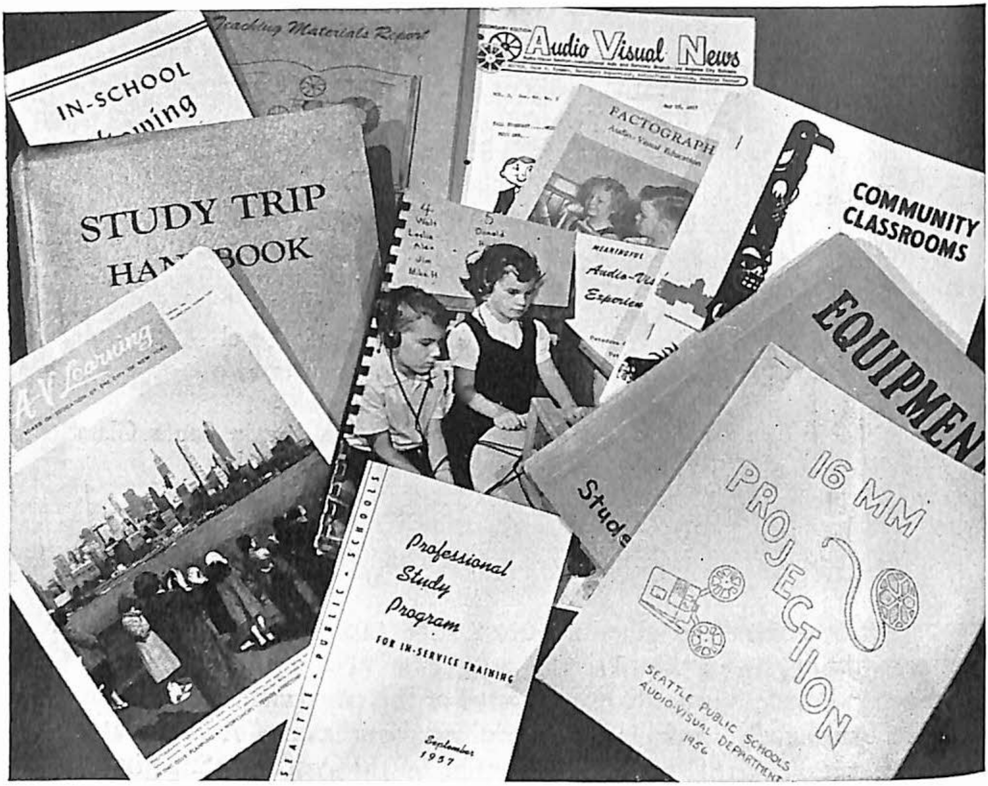


***Fig. 3–8.* Bulletins and handbooks make large contributions to in-service education programs.**

pand his editorial organization. Careful thinking, cooperation, deepened insights, upgrading of writing skill, increased recognition of individuals, and wider reading and study are found to result from a well-executed plan for encouraging committee and individual service projects. Such an imposing array of values merits consideration.

This important work by committees and individuals must of necessity involve the direct guidance and supervision of the director himself. Final decisions will, of course, be up to him rather than his helpers. The question that apprehensive students often ask is, "How can a director of audio-visual services who, for example, has been a science teacher work with a committee of English or Social Studies teachers?" The question can be answered easily. He can work with them successfully if he has adequate understanding of teaching methods in general, of the nature of learning, and of the role that significant experiences play in learning. The reader should review in Chapter Two the discussion of essentials for expert performance that point the way to clear thinking. However, the director should inform himself about national thinking in the various subject-matter fields, to be in a strong position to support the work of other curriculum specialists as he works with specific subject-matter and grade committees or individuals. Yearbooks and publications dealing with criteria for evaluation at elementary and secondary levels must be on every director's personal library shelf.

In the seven basic learning situations just described, the director of the audio-visual service program has a potential network for a tremendous range of learning experiences. In tapping that potential, the director must manage to be the supervisor, effective teacher, and dedicated organizer. Learning experiences for teachers have been directly related in the preceding analysis to a group of guiding principles for effective utilization of audio-visual materials. In turn these principles seem to demand specific kinds of teacher ability in the classroom. Such a system should be most helpful to the audio-visual supervisor in achieving better balance among the kinds of learning activities into which he and his assistants guide teachers. Such a system also helps in focusing attention on the relationships between the materials of instruction and instructional goals. What the director must continually keep in mind is the need for proper balance among the five basic utilization principles and the abilities they imply. If he fails in this, he will likely be driven toward undue emphasis upon physical equipment. But the analysis of learning situations and the selection of learning experiences in terms of needed abilities must always be considered in full view of limitations upon his action. Hence, the in-service education worker needs to concern himself with problems of process. Discussions of these important problems follow.

Analysis of Needs. Needs for action that are recognized by teachers as well as by the audio-visual specialist are the only fruitful points of departure for in-service education programs. When needs have been identified by teachers themselves in one way or another, the task of developing interest, of announcing, initiating, and organizing learning situations is made easy. If voluntary participation of teachers is to be the policy instead of a policy of imposition, then the first step to take is the identification of needs by means that they know about and approve. There are a number of important sources of data leading to the discovery of needs, and of course this discovery is not the responsibility of the audio-visual supervisor alone. Principals and other supervisors are also involved, and their efforts need to be pooled. Teacher-survey questionnaires, audio-visual center records of deliveries to schools, principals' personal observations and accumulated data, and evidence obtained through personal visits to classrooms and conferences with teachers as requested by them are suggested. Each of these sources of evidence of need is now explained, but the point should again be made that the reference base is the goal to develop teacher competence with audio-visual materials.

Teacher survey questionnaires ought to be very specific and brief, but if sent out at the end or beginning of the school year, they may in general be more comprehensive. The director of audio-visual services may actually use a check-list type of questionnaire to encourage teachers to define their own problems. This procedure suggests several problems to teachers in a list, and then asks them to check off one or more that they feel are common to their own classroom situations. Such cases need appropriate introductory statements like the following example:

> In recent weeks several teachers have sent in requests for materials and references relative to magnetic tape recordings, the making of transparencies, and photographic slides. School-building coordinators and principals have also indicated from time to time that teachers have been asking for help regarding lettering for bulletin boards and the construction of exhibits for school corridors, and that a few teachers have expressed interest in making better use of regular television programs in school activities. This short check-off sheet is being sent to ask if you would be interested in studying any of these problems, and in case you have other problems in this field that you would like help with, please feel free to add them at the bottom of the following list.

A number of problems could then be stated in "how-to-do-it" form with blanks to check as an indication of interest. Teachers also should be asked how they would prefer to engage in such activities. A check list could be devised that would elicit responses as to choice of teachers meeting, workshop, short course, or committee study, and that would also ask for information about choice of date to begin activity and how many hours of time on such activities teachers felt they would be willing to spend. Summary of such data would leave the door open for a repeat invitation at a later date. Surveys provide a good means also for finding out what formal courses teachers have had in audio-visual education, and what study experiences or projects they have undertaken in the past. Such data are of great importance in judging the status of over-all need. Of course, whenever opportunities present themselves, such as is the case of a cooperative school evaluation, teachers may be encouraged to fill out comprehensive questionnaires that ask for responses to detailed, searching questions regarding their competency. Such questionnaires should be formulated locally by directors who have in mind the kind of system of guiding principles and performance that was described in Chapter Two.

Audio-visual center service records provide another important source of evidence relative to teacher competence. While record-keeping is a topic that is discussed elsewhere in other connections, it should be pointed out here that an analysis of orders for materials over a six-month period will reveal whether teachers in any given school have been ordering too many or too few materials, whether materials are being used in only a few subject-matter fields, whether one school out of many shows up as a non-user of materials, and if supplies for the production of audio-visual materials are contributing to learning activities in all schools in equal amount. Such inferences from records will indicate possible weaknesses leading to further study at the school itself.

School principals, because of their daily contacts with teachers and students, are in a unique position to point out special needs in their schools to the director. Office records may show data on teacher interests, and experiences, and the principal himself can point out the nature of learning activities in his classrooms.

Personal visits to teachers' classrooms at their request and the conferences that follow will certainly provide evidence of a most reliable sort. Some communities by tradition insist that classroom visits be made, and if this procedure can't be changed, the director for teaching new skills to school-building audio-visual coordinators and other staff members who will be participating as instructors and leaders in implementing the master plan.

Everyone recognizes the need for planning in connection with the acquisition of materials, equipment, and facilities, but the zeal for planning in-service education activities seems to be all too frequently lacking. True, in-service education is a time-consuming business. It is also a costly business if outside experts are relied upon; and if staff members inside the organization are to be used, they must be adequately prepared in advance of meetings. Whatever particular obstacles arise, directors need to determine their own rates of speed and volume of action. Planning is the royal road to maximum accomplishment with minimum time, effort, and staff. Planning is also the means of realizing that the job cannot be done unless attention is given to it, and that emphasis upon group activity and contacts is likely to result in a difficult, time-consuming accomplishment at optimum speed. But the questions of how much and how fast are complex. They can be answered only in terms of financial support for adequate staff; inclination and skill of the director; the deeply ingrained traditions of the local school system; and the morale and motives of the teachers.

The director should finally be aware of the important fact that cooperative effort for decision on a plan for action takes time. Therefore he should see to it that large segments of a master plan (for example, six months or a year's work) are developed and approved by teachers of a school or group of schools, so that the same lengthy process doesn't have to be duplicated for each small meeting. One other important aspect of process in connection with involvement of individuals is the balance between face-to-face contact with groups and contact with them by means of written communications, that is, questionnaires, bulletins, and mail ballots, together with summaries of opinions and decisions.

Initiating and Maintaining Action. The important process of initiating and maintaining action in any program of in-service education is facilitated when the important preliminaries of recognizing needs and detailed planning through cooperative effort have been completed. For then teachers will be notified of opportunities to engage in learning activities that they know about and have already made plans to attend. In fact under conditions of optimum readiness for such participation, teachers with common interests have been preparing themselves on a limited scale through an in-advance reading program. Some plans for initiating meetings may be quite easy to handle; other plans may be more complex. For example, in one aspect of the program operating in the public schools of Seattle, Washington, a printed leaflet is issued to teachers announcing a schedule of courses for professional credit. Entitled *Professional Study for In-Service Training*, this booklet provides course schedules, registration dates, registration blanks, description of courses, and the number of local credits given for completing the course satisfactorily. In this booklet the writer noticed two courses in the field of audio-visual materials, titled "Audio-Visual Techniques in Teaching," running for twelve 2 hour sessions and carrying two professional credits; the other was "Audio-Visual Equipment" running for six 2-hour sessions, carrying one credit. The organization of such programs, of course, has grown out of policy-making sessions with the staff, and registrations for them is a voluntary matter. Whenever proper in-advance planning is lacking, initiating a series of meetings becomes a more difficult matter, needing all the customary development work prior to setting the meeting date, but even lack of planning is better than avoiding in-service education effort altogether.

When initiating in-service learning situations, the director must, of course, work through school principals and other supervisors. When proper plans have been made and the principal has taken the necessary steps or has given the authority, the director or building coordinator is free to make decisions. Once this clearance has been given, the group gathers and, under effective leadership, begins activities already suggested on the agenda, undertaking the planning of others according to expressed needs. In more complicated groups a steering committee is vital to safeguard against imposition of thought and activity not only by an undemocratic, over-zealous leader but by over-bearing individual members within the group. Steering committees, if guided in doing so, will serve the leader well by carrying on the democratic function as activities proceed, by serving as a liaison body for suggesting activities that the leader feels are urgent, and by exercising other controls as they become necessary, such as calling for completion of writing projects and possibly rejecting work of unacceptable character.

A system-wide council or committee for in-service education may prove to be helpful to a director of audio-visual services in initiating and implementing in-service education learning situations, since such a group, being a representative body of all teachers, may be able to present plans and call for extra attention and effort to meet higher standards of teaching competence. The point for emphasis is that the director need not and must not work alone on planning the initiation and implementation. Principals' councils may in their own analyses of needs, or upon the suggestion of the director of audio-visual services, undertake to seek staff motivation for study and action.

Teams of Teachers for Learning Situations. If the director of audio-visual education organizes only those situations where he personally will be the teacher, they will be too few in number indeed. Earlier in this chapter the concept of mass production of competency was discussed, and in that analysis of conditions the need for teaching selected staff members (one meeting at a time if necessary) to carry on a proliferation of group instruction was advanced. However, many learning experiences organized for in-service education in the field of audio-visual materials must of necessity be deeply concerned with broad phases of teaching, such as ability to construct valid teaching units. Obviously such abilities demand the combined and concentrated efforts of every person on the supervisory staff, principals, curriculum specialists, and the audio-visual director. Thus in any workshop, meeting, or course dealing with this and equally broad problems, a team of teachers is the only answer. Or if a committee is at work on a handbook on this topic for use by teachers, then a team of consultants and editors is called for. Actually audio-visual teaching abilities must not be taught at all unless they are taught in the context of professional teaching accomplishment. Hence all that has been said about the value of developing a correct view of teaching and learning now comes into full focus, for the director must be prepared to participate as a member of the team of teachers that teaches others the needed ability and understanding.

The director will, of course, have to select capable, previously trained teachers to carry out assignments in workshops, short courses, and teachers meetings, and in some cases teachers so selected may have to be given additional specialized training. This is exactly the case with school-building audio-visual coordinators and school principals, who, if the job is to be accomplished, may have to be urged to participate. The problem of adequate staff is likely to be an ever-present one. However, some school systems both large and small have found the means to employ audio-visual consultants who work under the supervision of the audio-visual director. Such capable, professional assistants greatly increase the tempo and scope of the in-service education effort as they become organizers and planners, as they become members of instructional teams, or as they work with teachers under any of the suggested organizational procedures for guiding growth experiences.

Many directors believe that the best and most feasible technique for speedy, effortless (personal, that is) accomplishment of in-service education objectives is to employ outside experts, set up a schedule of meetings, and run off the programs, one expert for each meeting. In these cases the assumptions about the learning process and the nature of the objectives should be analyzed. Such activity seems to indicate a belief that if you can get the attention of a teacher at a lecture, that is all there is to it. Development of ability, however, calls for understanding, a desire to take action, practicing under guidance with a desire to meet a standard of excellence, knowledge of progress, and satisfaction. Too often the work of a series of visiting lecturers or demonstrators is not tied together and too many objectives are set up for accomplishment at one time. If the use of experts provides the only feasible method for in-service education meetings, careful in-advance planning should be conducted to meet the shortcomings implied in the preceding criticism. One other point should be borne in mind by prospective directors of audio-visual services. They themselves should not shrink from opportunities to develop their own powers for leadership, their own technical skills, and their own penetrating insights into difficult curriculum problems. Concentrated effort for adequate preparation will, of course, be necessary for giving demonstrations, conducting discussions, and formulating plans for the production of bulletins, handbooks, case studies, and curriculum guides, but this is the road of experience that leads to genuine respect by colleagues.

Audio-visual service directors need to be ever so much more than skillful moderators. They need to be not only the technological expert but (and this is infinitely more difficult) they also need to provide the mainspring of leadership for the in-service education program in audio-visual methods. The director of audio-visual services will then, more than at any other time become the true *audio-visual specialist.*

SUGGESTED ACTIVITIES

1. Show in a point-for-point comparison that the director's supervision is, or should be, parallel to expert teaching.

2. When is a teacher competent in audio-visual methods?

3. What is the most fruitful beginning point of all good in-service "growth" programs as far as teachers are concerned? How are these "points of departure" determined?

* 4. Formulate a worthwhile objective for "teacher-growth" activity, and in brief outline form state elements of an appropriate *plan* for achieving it.

* 5. Agree in class upon four specific abilities that are important aspects of competence in the use of audio-visual materials, and list under each the *specific* learning experiences for teachers as routes to their development. Pool these in class, or turn over results of individuals' work to a special committee for editing and summarization, and duplication. (Refer to the listing of generalized learning activities in this chapter.)

* 6. Formulate several plans for obtaining both preliminary and continuing participation of teachers in formulation of policy. Once policy has been formulated and approved by the school superintendent, who executes it or enforces it? The people who helped make it, or the director who spearheaded its formulation?

7. Examine some reports of *workshops* and decide whether any real work was done by the people present or whether they just learned *about* something.

* 8. Select one of the case studies on utilization, as supplied to you by your instructor, or turn to one or more of the examples in Chapter Two, and write a critique of it in terms of your own knowledge and beliefs about audio-visual materials.

9. What are tentative titles for at least five short courses on audio-visual subjects that you would be willing to give for teachers in your school system? Pool your titles in class. Make a half-page outline of *activities* for any *one* of the courses you listed.

10. Make two lists of significant, specific projects; one that teachers could work on in groups (as committees), and the other where action by individuals would be most desirable.

11. Make an "outline" plan for teaching A-V skills to teachers,

encompassing a span of five years for your own school system, in terms of a specific number of teachers and a specific number of school buildings. Assume you are the full-time director of audio-visual services.

12. What criteria would you use to discover if a classroom teacher is using audio-visual materials competently?

* 13. Examine a number of so-called film guides, or filmstrip guides, to identify their strengths and weaknesses and their common basic elements. Assume that you have been asked by a producer to write a film guide. Make a list of the major headings in your guide, and outline the content under each in general terms.

* 14. Start now to make a list of professional books in the field of Audio-Visual Education that *you will want to order for your school system.* Add to the list throughout the course, revising the list as you find better materials. Why not use small paper slips, or 3 inch by 5 inch cards. Show your full bibliography to the instructor toward the end of the course.

* 15. In terms of a stated objective, describe in fifty words a *demonstration of audio-visual methods* that you would personally conduct in a group meeting. Record this description on tape for a critique by the class.

16. How would you make use of a utilization case study of a film in providing "growth" experiences? Mention at least two vastly different methods of using them.

17. What's wrong, if anything, with classroom visitation by you as a supervisor? What's good about it? How much of your time could you afford to devote to this "growth" technique (assuming you were a full-time A-V director)?

18. What is meant by an incentive system? Name some of the elements in your own personal system.

* 19. Assume that there's a real need for improving bulletin-board techniques in the school system where you teach, and you have decided to write a bulletin for teachers to read in developing their own abilities along this line. Plan this bulletin in outline form. Use the procedure of step-by-step directions and indicate the kind of illustrations you will use. Also at the end of your outline list ten eye-catching titles for other bulletins that you would like to prepare if you had time.

20. Make up a short questionnaire to determine the status of teacher experiences, formal and informal, with audio-visual materials. Bring this to class in ditto or mimeographed form for sharing with fellow members of the class.

21. Formulate a questionnaire that asks teachers to indicate their reactions to and their interests in a number of personal problem situations

for in-service education. Ask them to return the completed questionnaire, showing preferred method of study, total time limit, day or week, and month for beginning the project.

22. The usual, basic, graduate-level course in audio-visual education meets for at least thirty clock hours. Assume that you need fifty clock hours of time for each teacher in your school system to develop adequate competence with audio-visual materials. Now, using the number of teachers in your system as a reference point, (a) figure out the total number of hour-long conferences you would have to conduct; (b) figure out the number of two-hour teachers' meetings you would have to organize and carry out; (c) assuming that you have a coordinator in every school who is trainable, figure out the number of training sessions for school-building coordinators you would have to hold if they were to carry on a similar meeting for their schools for every one you held for them; (d) under each of these plans, estimate how long it would take you as supervisor to complete the job under present teacher-load conditions.

23. Examine at least one source unit or one detailed teaching unit in published form. Criticize the stated objectives from the following standpoints: (a) correctness of form, (b) comprehensiveness, (c) consistency, (d) significance.

24. Explain how each of the essentials for expert performance discussed in Chapter Two facilitates superior performance in conducting in-service education programs.

25. Why do experts in the field usually object to the term *training* in connection with in-service education. Is the expression "teaching skills to teachers" equally objectionable? Do abilities, as identified in this chapter and in Chapter Two in connection with competence in the use of audio-visual materials, demand insight and high calibre thinking?

* 26. How would you apply unit-organization procedure to in-service education planning? How does cooperative effort fit into this system of planning?

27. How would the formulation of your own teaching purposes help you to prepare a talk or demonstration for a group of teachers? For a parent-teachers group?

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SOME MOTION PICTURES AND FILMSTRIPS FOR IN-SERVICE LEARNING SITUATIONS

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Accent on Learning (MP, OSU, 30 min.)
Audio-Visual Materials in Teaching (MP, COR, 12 min.)
Better Bulletin Boards (MP, IU, 13 min.)
Bulletin Boards at Work (FS, WU, 42 frames)
Bulletin Boards for Better Teaching (MP, ISU, 10 min.)
Celluloid College (Basic motion picture technique) (MP, Sterling, 32 min.)
Chalkboard Utilization (MP, McGraw, 15 min.)
Classroom Utilization (USN Training Aids) (MP, UWF, 15 min.)
Communications Primer (MP, CS, 22 min., color)
Community Resources in Teaching (MP, ISU, 20 min.)
Creating Cartoons (MP, Bailey, 10 min., color)
Demonstration as a Teaching Technique (FS, WU, 35 frames)
Effectiveness of Audio-Visual Materials (FS, BSF, 45 frames, color)
Embedding Specimens in Plastic (FS, SU, 51 frames)

Enriching the Curriculum with Filmstrips (FS, SVE, 60 frames)
Facts About Films (MP, IFB, 11 min.)
Facts About Projection (MP, IFB, 11 min.)
Feltboard in Teaching (MP, WU, 10 min.)
Field Trip (MP, VBEd., 10 min., color)
Film Inspection Procedures and Standards for 16mm. Film (FS, WSC, 55 frames)
Film Research and Learning (MP, WisU, 14 min.)
Flannel Graph: Its Applications in the Primary and Elementary Classroom (MP, UMinn, 27 min., color)
Fundamentals of Photography: Developing the Negative (MP, UWF, 19 min.)
Fundamentals of Photography: Printing the Positive (MP, UWF, 19 min.)
Handmade Lantern Slides (FS, OSU, 51 frames)
Handmade Materials for Projection (MP, IU, 20 min.)
High Contrast Photography for Instruction (MP, IU, 13 min.)
How to Keep Your Bulletin Board Alive (FS, OSU, 32 frames)
How to Make a Puppet (MP, Bailey, 12 min.)
How to Make and Use Dioramas (MP, SU, 27 min.)
How to Make and Use the Feltboard (FS, OSU, 52 frames)
How to Make Handmade Lantern Slides (MP, IU, 21 min., color)
How to Make Papier Mache Animals (MP, Bailey, 12 min.)
How to Use a Teaching Film (FS, BSF, 43 frames, color)
Improving Use of the Chalkboard (FS, OSU, 44 frames)
Introduction to Map Projection (MP, UWF, 18 min.)
Learning to Draw (MP, Beseler, 9 min.)
Lettering Instructional Materials (MP, IU, 23 min.)
Making Field Trips Effective (FS, WU, 46 frames)
Making Your Chalk Teach (FS, WU, 47 frames)
New Tools for Learning (MP, EBF, 19 min.)
Operation and Care of the Bell and Howell Sound Projector (MP, IFB, 18 min., also for Ampro, RCA and Victor Projectors.
Overhead Projector (MP, ISU, 17 min.)
Paper in the Round (MP, McGraw, 10 min.)
Passe Partout Framing (MP, IU, 10 min.)
Photographic Slides for Instruction (MP, IU, 11 min.)
Poster Making: Design and Technique (MP, Bailey, 9 min.)
Recording with Magnetic Tape (MP, UMinn, 8 min.)
Routine Checking of Audio-Visual Equipment (FS, WSC, 50 frames)
Selection and Planning (USN Training Aids) (MP, UWF, 16 min.)
Simplified Filmstrip Production (FS, OSU, 40 frames)

Slides, Large Drawings, and Transparencies (USN Training Aids) (MP, UWF, 18 min., color)

Teaching by Television (FS, BSF, 51 frames, color)

Main Sources

Bailey	Bailey Films, Inc., Los Angeles, California.
Beseler	Beseler Company, East Orange, New Jersey.
BSF	Basic Skill Films, 1355 Inverness Drive, Pasadena, California.
COR	Coronet Films, Coronet Building, Chicago, Illinois.
CS	Cine Service, 1350 Westwood Boulevard, Los Angeles, California.
EBF	Encyclopaedia Britannica Films, Wilmette, Illinois (or at regional film libraries).
IFB	International Film Bureau, 57 East Jackson Boulevard, Chicago, Illinois.
ISU	State University of Iowa, Bureau of Visual Instruction, Iowa City, Iowa.
IU	Audio-Visual Center, Indiana University, Bloomington, Indiana.
McGraw	McGraw-Hill Text-Film Department, 330 West 42nd St., N.Y. 36, N.Y.
OSU	Ohio State University, Photographic Laboratory, Columbus 10, Ohio.
Sterling	Sterling Films, Inc., 316 W. 57th St., N.Y. 19, N.Y.
SU	Audio-Visual Center, Syracuse University, Lancaster at Collendale, Syracuse, N.Y.
SVE	Society for Visual Education, 1345 Diversey Parkway, Chicago, Illinois.
UMinn.	Audio-Visual Center, University of Minnesota, Minneapolis, Minn.
UWF	United World Films, (Castle Films Dept.) 1445 Park Ave., New York 29, N.Y.
VBEd	Commonwealth of Virginia, State Board of Education, Richmond 16, Va.
WisU	Bureau of Visual Instruction, University of Wisconsin, 1312 W. Johnson St., Madison, Wisconsin.
WSC	Audio-Visual Center, Washington State College, Pullman, Wash.
WU	Audio-Visual Materials Consultation Bureau, Wayne University, Detroit, Michigan.

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CHAPTER FOUR

ACQUISITION OF MATERIALS AND EQUIPMENT

THE job of acquiring the audio-visual materials and equipment that teachers need for accomplishing their objectives requires an intimate knowledge of audio-visual technology. At the turn of the twentieth century materials and equipment for purchase were practically nonexistent. Today the audio-visual market places are bulging, and the task of locating and obtaining high-quality materials and equipment, however interesting it may be, is both arduous and critical. For the purposes of discussion in this chapter, *materials* and *equipment* are differentiated, and they will be dealt with in that order. A given item of material should be considered as a concentration, system, or body of content of potential value when put to work. On the other hand, equipment should be recognized as the means of presenting such content, or in the case of the bulletin board and the chalkboard, the means of displaying it; and in the case of the camera, of assembling it.

KINDS OF AUDIO-VISUAL MATERIALS

Audio-visual materials is the term commonly used to refer to those instructional materials that may be used to convey meaning without complete dependence upon verbal symbols or language. Thus, according to the definition, a textbook does not fall within this grouping of instructional materials, but an illustration in that book does. Some of them, like taking a field trip, dramatizing an event or a procedure, and making a diorama in class are in the nature of processes and experiences. Some, like the motion picture, require the use of equipment to release their latent value. Still others, like an exhibit and a study print, need no equipment whatever. Some materials have been in use for decades, while others like the miniature slide, tape recording, and television are relatively new. Some are more abstract, but at the appropriate time and place all may make important contributions to teaching-communicating-learning processes.

The term *audio-visual materials* is not a satisfactory one, since it designates in common usage both material things as well as processes. Field trips and a dramatic performance are processes, not materials. A field trip is a means of studying and reacting to and using real things and actions in their realistic environment, and a dramatic performance is a means of representing people, events, and procedures. However, there is dramatic production activity for some pupils and only dramatic observation for the viewers. The camera helps a teacher assemble material for subsequent presentation, and one of the uses of the opaque projector is to help a teacher enlarge material to facilitate observation. It is obvious that an opaque projector, a bulletin board, an exhibit case, a feltboard, and chalkboard are not materials but are means of displaying materials. Furthermore, making any one of the audio-visual materials has high potential value as a means of motivating and organizing class activity. The director should be aware of this differentiation, since it is his responsibility to keep the wide range of possibilities for experiencing in mind as routes to better learning.

A brief though comprehensive listing of audio-visual materials, together with the necessary related equipment or processes for putting them to work in the classroom, will be helpful to the student for present and future reference purposes. Such a list is now presented; it should be noted that materials are arranged in order from the most realistic to the most abstract:

1. *Realia in the Social and Physical Environment.* These materials, situations, and people have to be visited, studied, observed, reacted to, and worked with, right in their natural environments, schoolroom, schoolyard, city, farm, state, or nation; that is, by means of field trips or in connection with other community study and work projects. Some of these realia, such as equipment, materials, specimens, and objects, both animate and inanimate (and people too), may be brought into the classroom. The study of realia may then demand field trips, demonstrations, experiments, and other direct experiences as processes for getting the meaning. Some realia will have to be brought into the classroom in display cases, preferably in lifelike arrangement, and some may be suspended in the air or attached to bulletin boards.

2. *Dramatic Performances (portrayal of people, events, procedures).* Such performances are obviously not materials, but rather are processes for using properties and representing situations in dramatic rather than graphic form. Actually, pupils become "models" of people. The classroom post office or store in the primary grades is a good example. Often equipment such as tape recorders and photographic and television cameras are called for. Also dolls and puppets are produced for use as dramatic models.

3. *Models, Mock-ups, Globes, and Relief Maps.* These materials may be purchased or produced by the teacher and used as means of communication, or they may be produced jointly by pupils and teacher as a focal point for the learning activity. Many of the models may have moving or removable parts. Exhibits and dioramas made up of models instead of realia may be borrowed, purchased, or constructed.

4. *Television Programs.* The use of such material demands television receivers and antenna systems in schools and very possibly school studios and closed-circuit cameras and distribution systems. Television programs may also be produced jointly by pupils and teacher as learning experiences.

5. *Motion Pictures.* Projection equipment for accommodating either optical and/or magnetic sound tracks and projection screens

are, of course, required. Production of motion pictures by pupils and teachers is also a possibility as a major learning activity, if cameras, lights, film stock, and other related equipment items are available.

6. *Still-Picture Projection Materials.* The following materials may also be produced by pupils for various communication projects as learning activities.

a. *Transparencies.* Use of transparencies demands overhead projectors of appropriate size.

b. *Slides (handmade or photographic) in all sizes.* Use demands separate or combination projectors for 3¼ in. by 4 in., 2¼ in. by 2¼ in., and 2 in. by 2 in. slides, in regular or overhead adaptations. Slides for short-exposure techniques demand flashmeters and appropriate projectors.

c. *Filmstrips (sound and silent).* Use of these materials demands a projector for silent filmstrips; for sound filmstrips, a phonograph, tape player, or some manufactured combination of projector and sound reproducer has to be added. Short-exposure filmstrips demand use of flash meters and appropriate projectors. Projection screens of appropriate size are also a requirement.

d. *Opaque projection material (drawings, objects, illustrations).* The projection of such material requires the opaque projector and projection screens of appropriate size.

e. *Micro-projector materials (microscope slides and microscopic objects).* Projection of such material, animate or inanimate, requires the micro-projector and nonbeaded screen.

7. *Study Prints and Pictorial Illustrations.* Bulletin boards and opaque projectors may be required for facilitating observation. Such materials may be photographed or drawn by pupils in connection with learning activities.

8. *Radio and Audio Programs.* The use of tape or disc recordings and radio broadcasts demands a wide variety of equipment, such as recorders, record players, microphones, aggregate boxes, earphones, radio receivers, and even radio stations. Students and teachers may produce dramatic and other radio programs; they may produce a series of language lessons, or they may analyze speech needs and do remedial work.

9. *Graphic materials (maps, graphs, cartoons, diagrams and*

charts). These materials often require for adequate observation opaque projectors, bulletin boards, flannel boards, chalkboards, and overhead transparency projectors. Use of such materials often demands that they be prepared by teachers for purposes of communication, or by pupils for communicating with others. Cameras, slide projectors, and drawing tools, together with diazo chemical supplies and processing equipment, may be required for their production. Graphic materials may be on canvas, flannel, muslin, paper, wood, glass, and plastic.

Necessary Supplies. Repeatedly in the foregoing groups of audio-visual materials, reference was made to their production by the teacher and also by the joint efforts of teachers and pupils; by the former, of course, for purposes of improving communication, and in the latter case as a basis for organizing learning activities. To make possible these production activities, a wide range of expendable materials needs to be stocked for issue to teachers, and this becomes a vital aspect of the organized audio-visual services program. Such supplies need to be centralized in large quantity at the audio-visual service headquarters, or by special arrangements of the director, at a school-system supplies center, or even at both places if a combination serves to facilitate ordering and use. In addition to large stocks of supplies, i.e., large enough to serve school needs for one year, smaller quantities of the more commonly used items may be kept on hand in each school building to meet needs of teachers quickly. Also since some materials deteriorate, the plan for ordering, distribution, and storage needs to be carefully formulated and periodically evaluated if waste is to be avoided.

In the next section the prospective director is encouraged to tackle the problem of deciding which among the many materials described in preceding paragraphs ought to be procured for teachers as a part of his professional services.

DETERMINATION OF SCOPE OF THE AUDIO-VISUAL SERVICE

The director of audio-visual services may find it helpful to think of audio-visual materials in different frameworks of reference. First he may think of audio-visual materials as being the means of pupil experiencing. In this case he thinks of materials and ways of using them to provide experiencing and problem-solving by learners. He thinks of field trips and dramatic performances and of the production of material as foci, or organizing centers, for classroom activities and pupil purposing. Second he may think of audio-visual materials as means of communicating; materials that teachers use to explain content, processes, and procedures; materials that affect viewers in desirable ways. Both of these modes of orientation are necessary, and even though they are merged in the teaching process, the director needs to bear them in mind. They are both implicit in the six basic roles that audio-visual materials play in helping teachers reach their objectives. The big problem for the director as presented in this section, is: *Which of the audio-visual materials should be acquired and incorporated into the service program?* The answer to this question can be given only in terms of the needs and priorities of the local situation. However, the basic factors that enter into the decision are as follows:

1. What teachers want and need in terms of present and the hoped-for curriculum
2. Nature of previous local experience
3. Status of school facilities
4. Cost and financial support; present, and estimated for the future
5. Present and future supply for purchase
6. Predicted service difficulties to be surmounted
7. Scope of staff coverage
8. Nature of the roles that the materials will play in meeting instructional needs

Each of these factors merits a brief analysis.

What Teachers Want and Need. The surest way to make serious mistakes is to ignore what teachers really believe they need. Their needs and wishes should be a basic factor in decision. Directors should get the facts and should elicit the required participation through bulletins and questionnaires or directly through curriculum and other study committees. If the director insists, for example, on putting all his money in the *filmstrip* basket, and the teachers wanted and were interested in expanding into motion pictures, he is heading for trouble.

Nature of Previous Local Experience. Years of previous successful experience with one or more kinds of audio-visual materials produces readiness for others and a good base upon which to build new teacher competencies. Teachers become audio-visual minded; that is, they grow in their understanding and ability to put materials to work. They are then likely to become eager to try new materials. Thus if teachers have used motion pictures, filmstrips, and slides, they may be willing or even eager to undertake a production program involving handmade slides and tape recordings, or even motion pictures. Unfortunately, unsuccessful previous experience will naturally set up negative attitudes toward new programs of service. In this case reconditioning may have to take place before new developments are undertaken.

Status of School Facilities. Elementary school teachers may be limited, as far as projected audio-visual materials are concerned, to the use of filmstrips on rainy days because of lack of adequate classroom light-control systems. Or perhaps only one projection room is available, and to add motion pictures to the filmstrip and slide service in the elementary schools would overtax the physical facilities as far as properly equipped classrooms are concerned. Materials that do not require expensive light-control systems, such as dramatizations, realia, models, exhibits, large 7-inch by 7-inch transparencies, radio and recorded audio-programs on records and tape, graphic materials via flannel board, bulletin board, and chalkboard, and study prints or other pictures made by means of school-owned cameras, may thus seem to be the choice. However, the motion picture offers a great contribution to experiencing, and therefore it needs to be considered along with a number of other factors before reaching a decision.

Cost and Financial Support. With other factors kept constant, the factor of cost and financial support is obviously an important one in the determination of what materials the audio-visual service program ought to include. Any cost analysis made needs to be complete. Not only does the director need to figure what the cost will be (for example, of production supplies) but he ought also to estimate the costs for related equipment and school facilities, as well as the costs of paying for required commercial laboratory services. For example, if motion pictures are to be included, then what will be the cost for purchase, rental, maintenance, related equipment facilities, insurance, etc.? In dealing with the factor of cost, the director must also estimate what the future financial support is likely to be in order to decide whether any one kind of material can be purchased in adequate amount.

Present and Future Supply. Taking sets of study prints as an example, the question should be asked: What are the present sources for purchase? Probably the two most comprehensive sources are the Informative Classroom Picture Publishers, Grand Rapids, Michigan, and the Creative Curriculum Society of Mankato, Minnesota. There are a number of other less comprehensive sources as well. Other questions need also to be raised. Are the sources for purchase likely to increase in number? Are study prints popular with teachers? Are other audio-visual service centers increasing or decreasing their study print libraries? What are their circulation figures? What sources for study prints other than commercial distributors can be tapped? Such data are essential if a good decision is to be reached insofar as this factor is concerned. Other materials being considered for procurement will have to be analyzed similarly.

Predicted Service Difficulties to Be Surmounted. If the example of study print sets is used in the discussion of this factor also, the director will have to raise and answer the following questions regarding the proposal to incorporate them into the service program: How will study prints be grouped? In sets corresponding to teaching units? Other general subject matter topics? How will they be packaged and stored? Can boxes or envelopes be purchased? How may they best be preserved? Should they be mounted on mounting boards, mounted by rubber cement or dry photo tissue, or laminated in plastic? If the loan period for some prints needs to be longer than for other materials, how many sets on each topic will be needed? How will they be delivered and picked up? Who will do the work of inspection and checking against loss? Similar questions will have to be answered for all materials. In the face of such facts, all involved can come to a sound decision for a given local situation.

Range of Curriculum Applicability. Another crucial question in the director's process of determining which kinds of materials he should supply as a part of the program of services is this: Is a particular kind of material suitable for use at all grade levels in the system? In general, priorities should be given to kinds of material that have wide application over the entire range of the curriculum. The reader should note that the problem of whether a particular title ought to be used in the fourth grade, and again in the ninth, is not involved in the study of this factor. The problem here being considered is: Should the motion picture, for example, be selected instead of some other kind of material, such as micro-slides, because of its wider potential for use throughout the curriculum?

Nature of the Contribution to Instructional Needs. In considering this factor the director should seek to estimate along with his teacher colleagues the nature of the experience a given type of material is likely to provide. To explain textbook matter, to provide rich vicarious experience, to facilitate research and remedial work, to overcome physical difficulties of subject-matter presentation, to get students ready for difficult problem-solving tasks like laboratory work and advanced shop work are a few of the potential contributions audio-visual materials may make to instruction. Some of the materials are more restricted in their potential contributions than others.

Balancing the Factors. The task of determination is a problem of arriving at a wise policy in terms of efforts to help teachers. This policy will have to be the best possible balance between the factors just described. Even in the largest and most comprehensive programs this task is great because it may be better to have adequacy in ten kinds of material than inadequacy in twenty.

Whenever it is decided what kinds of material are to be made available to teachers, consideration has to be given to the problem of balancing centralization of circulation at the audio-visual service headquarters and decentralization of circulation at the point of use. A brief discussion of this problem follows.

Centralization and Decentralization of Materials. Local centralization of materials under good management is more efficient and economical from the standpoint of maximum use of the fewest number of available units of material, but the usually necessary short loan-periods may work a hardship on teachers, as well as on busy, central office booking, inspection, and shipping personnel. Some service centers are therefore decentralizing the more inexpensive types of materials such as filmstrips, tape recordings, phonograph recordings, maps, globes, and study prints. Again this is a local decision involving more than just simple arithmetic. Remembering that it is *service to the teacher* that is the crux of this matter, it can be said that in general the more expensive and less frequently requested items ought to be stored centrally, and of course this is equally applicable to units of equipment. Decentralization may be a way of saying that the director of audio-visual services declines for the present to organize and supervise the use of certain kinds of material or process. Provisions for field trips may be a case in point. A great deal can be done in setting up a formal organization to facilitate field trips, or the handling of the field trip program may be left entirely to the individual school, that is, to the principal, teachers, and to the audio-visual building coordinator. This type of decentralization is desirable only if the plan reflects careful planning and decision by all concerned. However, decentralization of audio-visual services may be necessary if the director fails to get adequate staff and budgetary support, or it may be deliberately planned as a stop-gap measure, pending further developments.

A Hypothetical Service Program of Materials. Using the listing of audio-visual materials already presented, and assuming a reasonably well developed program, the following hypothetical service program may be valuable to the student as an example for present study, analysis, and criticism:

I. *Kinds of Audio-Visual Materials to be Circulated from Central Service Headquarters*
  A. Kits of science apparatus and materials for demonstrations
  B. Realia display cases
  C. Motion pictures
  D. Filmstrips (silent and sound)
  E. Slide-sets in 2-inch by 2-inch size
  F. Pre-recorded magnetic tapes
  G. Phonograph recordings
  H. Short-exposure slide-sets in appropriate sizes
II. *Experiences, Processes, and Techniques Developed Through Promotion and In-Service Education, but left to the Individual School for Implementation*
  A. Bulletin board displays
  B. Dramatic performances (also puppetry)

C. Field trip
D. Flannelboard displays
E. Chalkboard
F. Demonstrations and experiments
G. Opaque projector
H. Overhead transparency projector

III. *Supplies Available from the School System center for Storage at Individual Schools to Facilitate Production of Audio-Visual Materials*

For producing the following:

A. *Handmade 3¼ inch by 4 inch Slides*—etched glass, cover glass, masks, slide crayons, handmade-slide drawing frames, ½ inch slide binding tape (gummed or plastic), radio-mats for typewritten material, slide inks, and soft lead pencils
B. *Nonphotographic, graphic transparencies*—plastic sheets, slide inks, india inks, drawing pens (flo-type), small drawing boards and grids, cardboard mounts, transparent or masking tape
C. *Flannelboard and materials*—Celotex, plywood, masonite building boards in desired sizes, cotton flannel, or felt; coarse sandpaper stock; cardboard stock; and glue
D. *Tape recordings*—magnetic recording tape, splicing tape, extra empty tape reels
E. *Photographs and photographic slides*—unexposed black and white film stock, in regular and fast speeds, including Polaroid-type transparency "46" film stock, unexposed color-film stock in slow and fast speeds; spare photoflood lamps; photo drymount tissue and rubber cement; and mounting stock in desirable colors
F. *Motion pictures*—unexposed motion film stock in both color and black and white, and in fast and slow speeds, *single perforated;* spare floodlamps for lighting.
G. *Displays*—felt-nib pens in various sizes; inks in desired colors; cardboard stock in various colors; construction paper, colored yarns, confetti ribbon, burlap cloth, metal foil, wire mesh stock

IV. *Undeveloped Services Decentralized at Schools on a Consultative Basis Only, Pending Further Development*

A. Radio programs
B. Television programs
C. Models, maps, globes, dioramas
D. Community contact service for school-community reciprocal activities
E. Charts, diagrams, posters, graphs, cartoons
F. Graphic transparencies (ammonia process)
G. Micro-projection material
H. Mounting specimens in plastic

Instructional Materials Programs. It is obvious that in the treatment of audio-visual materials in this book, they have been deliberately and forcefully tied to the achievement of valid teaching objectives and to the significant problem-solving, learning experiences of the pupils. Audio-visual materials are instructional materials, but the term *instructional materials* when applied to school-system service centers is a broader more comprehensive term. Hence, looking back over the preceding hypothetical service program, it can be seen that to convert this program to an *Instructional Materials Service Program* would require the addition of all materials of a printed nature, such as library and reference materials, textbooks, pamphlets, documentary materials, and professional library and curriculum publications. The entire range of school supplies could also be handled by the director of the *Instructional Materials Service Center*. This broader services program will be discussed further in Chapter Eight.

The history of experience in any given community and its setting in relationship to a state's educational policy, legislative and otherwise, will have to be the bases for determination of plans for service. The director must seek out the facts, must elicit the participation of the teaching staff and his advisory committee to formulate policy for the approval of, or modification by, the superintendent of schools; he must then execute it in terms of valid educational needs.

EVALUATION OF AUDIO-VISUAL MATERIALS FOR SELECTION

The inexperienced and incompetent have no business doing the important work of evaluation. Evaluation is a critical function and one that carries with it a heavy responsibility. The decisions to accept or reject and to rate high or rate low are in a real sense a public display of competence or incompetence. It must be remembered that producers of materials deserve to be treated fairly, and that to choose poor quality materials is not only a sheer waste of public money but also a source of potential educational injury to learners.

Just as an experienced editor will get a good idea of a manuscript by reading a chapter, an experienced director of audio-visual services or an experienced teacher will frequently be able to make correct judgments leading to the acceptance or rejection of a motion picture by looking for five minutes at the first part of a twenty-minute film. Of course there is danger in such a hasty examination, and there are better ways of getting the enormous task of evaluating material for purchase completed. There are occasions when not to make a complete and critical examination before purchase and distribution will lead to embarrassment and even disaster. The issue in quick judgments is whether or not enough understanding can be mobilized to make sound judgments. It is always possible that, to an experienced and penetrating observer, the material being examined will reveal early in its organization such glaring weaknesses or obvious strengths in design and treatment that continuance of the examination is unnecessary. The criteria to be stated later will clarify these possibilities.

Two levels of selection should be identified. The first is at the classroom teaching level. At this level the teacher selects from local or remote sources for a forthcoming unit and carries out an appropriate pre-use examination. The second level of selection is the system-wide, central distribution level. At this level the director of audio-visual services must assume responsibility for selection of the best materials that teachers need to carry on their work effectively. The best bases for selection of materials at both levels are their probable contribution to valid teaching purposes (these of course being best possible estimates of pupil needs), their excellence in technical quality, and their suitability for known groups of learners. The only valid reason for selection at the second level is to facilitate selection at the first. The director himself must therefore be able to evaluate materials for selection and to teach others this ability, and he must be successful in obtaining the willing services of teachers in setting up sound policy and in getting the work of evaluation and selection done as efficiently as possible. The subjective nature of the task of evaluation demands a usable set of criteria; usable, that is, in terms of effectiveness and convenience.

General Criteria for All Audio-Visual Materials. The most fruitful line of attack on the problem of the selection of a wide variety of materials is to develop a set of general standards applicable to all kinds of audio-visual materials, and then add to this set such additional criteria as are needed to judge the value of specific kinds of material. Many statements of criteria appear in the literature. Some of these are general in terms of all materials, and some are very specific dealing with the motion picture, the still picture, and pictures for teaching geography concepts or for motivating reading. On the basis of personal experience and a synthesis of the standards recommended in the literature, the author lists the following brief questions which should be of help to the director in developing his ability to choose wisely such materials as models; study prints; filmstrips; slides; motion pictures; and radio, television, and recorded audio programs.

Curriculum Relationships

1. Will the material be usable in direct relation to a teaching unit? To a specific experience, or problem-solving activity?
2. Is the content to be communicated by the material useful and important? To the pupil? To the community? To society?
3. Will the material make a contribution to major teaching purposes? (Or toward the major goals of the learners?)
4. Does the difficulty level of the teaching purposes (the understandings, abilities, attitudes, and appreciations) demand the help of the material being examined?
5. Will the material be likely to call for vicarious experiencing, thinking, reacting, discussing, studying?
6. Is the content to be communicated presented in terms of problems and activities of the learners? (Logically arranged subject-matter may be called for at advanced levels of study.)
7. Will the uses of the material being examined be obvious to teachers?
8. Is content to be presented by the material sufficiently rich in concepts and relationships?
9. Does the material possess appropriate content that facilitates the process of inference? Size? Temperature? Weight? Depth? Distance? Action? Odor? Sound? Color? Lifelikeness? Emotion?

10. Is the material accurate, typical, and up to date?
11. Is the kind of material uniquely adapted to the achievement of the desired teaching objective?
12. Is the content in the material in good taste?
13. Is the material likely to be of value for a period of seven to ten years?
14. Could the material be used conveniently within a regular class period?
15. Is the content of the material sufficiently rich in number of examples to warrant sound conclusions? That is, are both sides of an issue explored? Or if not, is the insufficiency pointed out?
16. Are the experiences portrayed by the material easily within the realm of regular classroom activities that should be organized by the teachers and pupils?

Technical Quality Relationships

1. Is technical quality of the material artistic?
2. Is the producer's mode of communication adequate for the purpose? That is, is the message put over clearly, forcefully, in ways that attract and hold attention?
3. Are physical size, format, and color satisfactory?
4. Is workmanship in the construction of the material adequate?
5. Is the content to be presented free of conflicts and distractions?
6. Was careful planning by the producer obvious in the content and structure of the material?
7. Did the producer of the material set out to produce the material for school audiences with competent educational consultants.

The prospective director would do well to supply for each of the preceding questions a specific example, either in the affirmative or negative, and to gain as much experience as possible by screening, viewing, listening, or otherwise examining materials from a wide variety of producers. The preceding general standards, applying to all audio-visual materials, will carry the burden of the evaluation in any case, but there are crucial, specific, supplementary standards that will also aid the director and his teacher deputies in making correct decisions.

Specific Criteria. Additional criteria that apply to specific kinds or classes of audio-visual material are important to all who select materials on the basis of suitability of content instead of an eye-catching title or a glowing superlative-filled advertisement. Such criteria may sometimes by themselves serve as the basis for a quick and correct judgment.

For Motion Pictures and Television Programs

1. Are picture images sharp?
2. Is the sound intelligible and realistic?
3. Is there sufficient action?
4. Is continuity natural and understandable?
5. Is composition satisfactory?
6. Is content free of conflicts in music and speech or dialogue?
7. Are pictorial sequences of appropriate length?
8. Is pacing of the action appropriate?

For Models and Display Cases

1. Is construction sturdy enough to withstand hard usage?
2. Is the size suitable for the material and the nature of the observation activities intended? Is the scale appropriate?
3. Are labels easily readable?
4. Are arrangements of models realistic?
5. Does the material contain sufficient details?

For Pictorial Study Prints, Filmstrips, and Slides

1. Is the content free of irrelevant material?
2. Are the desirable details shown in proper size and number for optimum observation and correct conclusions?
3. Is photographic quality acceptable? Sharpness? Composition?
4. Are pictures free of distortion because of good balance between the artist's technique and educational needs?
5. Are the colors employed natural and desirable?
6. Are pictures available in units or well-organized sets?
7. Do sets of pictures provide adequate continuity and range?
8. Is the designated continuity of pictures appropriate for the teaching objective?
9. Are captions and explanations readable and suitable for the teaching purposes?

10. Are captions and explanations of suitable length and in proper positions for the pictorial content being presented?

For Audio Programs

1. Are the sound effects realistic?
2. Is speech clearly understandable?
3. Is sufficient action implicit in the content?
4. Is continuity understandable?
5. Was the program free of conflicts between background sounds and speech or dialogue?

For Graphics

1. Are the symbols understandable by the learners who are to observe them?
2. Will it be relatively easy for the teacher to bridge the gap between graphic symbols and the real situation?
3. Does the graphic material present the optimum amount of material for the grade level of the observers?
4. Are labels readable at desirable viewing distance?
5. Is appropriate action implied?

The questions listed under both general and specific criteria have been phrased to call for either *yes* or *no* answers. However, in actual practice, evaluation forms may be constructed cooperatively which will demand the use of numerical or qualitative rating scales. Since the director of audio-visual services is more of a *methods and media* specialist than a subject-matter specialist, he must enlist the help of teacher specialists at all levels of instruction to advise him in the crucial matter of evaluation and selection. This situation demands consideration of the important process of putting the criteria to work by the proper people.

The School-System Process of Evaluation and Selection. The director of audio-visual services will have to consider, as always, the local patterns and policies for the process and make decisions accordingly, but specific plans of action should grow out of cooperatively formulated policy. If such policies do not exist, then the director should take action to have a study committee appointed by the superintendent, after proper discussion of the matter in a bulletin to the teachers. If policies for selecting textbooks, library books, and other materials such as *sponsored* leaflets and booklets already are in effect then the study committee should be charged by the superintendent with the responsibility of working with the director of audio-visual services to develop a set of recommendations for approval by all concerned, pertaining only to audio-visual materials. In the absence of a comprehensive policy regarding all instructional materials, the director should undertake to interest all supervisory personnel concerned in developing a workable, over-all operational plan. One or more of the following procedures may be needed in setting up an effective process for selection:

1. The method of procedure is to organize evaluation groups or preview panels on the basis of subject-matter fields, involving a representative from each grade. Such panels should be as numerous as needed to get work of evaluation for selection completed. Panel members should, of course, be appointed by top administrative officials or by school principals at the suggestion of the director of audio-visual service. The director must then arrange schedules and preview programs for meetings; compile lists of likely materials for consideration, by circularizing teachers with lists of titles, catalogs, or sourcebooks; prepare appropriate evaluation forms, or see that this is done by the original study committee; coordinate the preview and evaluation sessions with the help of his audio-visual, school-building coordinators; prepare a brief but effective bulletin for evaluators, giving instructions to chairmen and other participants; arrange schedules of materials for panels so that evaluators will be viewing or examining materials with the same curriculum purposes in mind; and of course he ought to arrange his own schedule so as to meet with such groups periodically to find ways of speeding up the process or encouraging the workers.

2. Another method of procedure is to evaluate new materials by actual classroom try-out in advance of purchase. The more expensive materials, such as motion pictures, can be procured on a rental basis, with evaluation reports being made by students and teachers or both. In this case the director will have to do the necessary preparatory and organizational work of lining up the try-out schedules. Less expensive materials may be purchased outright from sourcebook and catalog descriptions, with multiple copies being purchased as soon as actual try-out evaluation can confirm the predicted value.

3. Under still another method, the director assembles the titles desired on the basis of requests from individual teachers, orders the titles in for preview by the teachers requesting them, and upon an expression of satisfaction, purchases the material and adds additional copies upon confirmation of value.

4. A combination of the preceding methods may be called for when considering the entire range of audio-visual materials.

Whenever multiple or even single copies of a given item of material are to be purchased, a group judgment by teachers who are to use the material will be the safest procedure to follow. Other instances where group judgments are imperative are; (1) in the acquisition of sponsored materials, (2) when materials are made available by unknown and unestablished producers, and (3) when adequate descriptions of content are unavailable at the time of purchase.

Techniques, as has been emphasized many times previously, ought to grow out of principles of action. An unusually good example of a set of principles governing procedures for selecting instructional materials is to be found in the public schools of Rochester,[1] New York. The principles are as follows:

PRINCIPLES

1. Instructional materials are those materials which in themselves have educational content and are used to achieve educational goals.

2. A wide variety of instructional materials—textbooks, charts, maps, globes, periodicals, motion pictures, filmstrips, recordings, models, etc.—are essential for best instruction. The selection of instructional materials should be considered as a whole and in terms of their interrelationships.

3. The single, most important objective in all selection procedures is to locate and make available the best materials that can be found to help in reaching the teaching objectives set forth.

4. Selection of materials should be based upon the judgments of those who are to use them. Group judgments are superior to individual judgments. Teacher judgments are best when they are based upon actual experience in using the materials in classroom situations.

5. The selection of instructional materials should be closely coordinated with curriculum development work.

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[1] By permission of Paul Reed, Director, Department of Instructional Materials, Rochester Board of Education, Rochester, New York. The policy draft was entitled *Guiding Principles and Procedures for the Selection of Instructional Materials* and was dated September, 1957.

6. Lists of approved and recommended instructional materials should be under constant revision to assure up-to-dateness. Normally no approval or recommendation should be for a period greater than five years.

7. In the case of basal textbooks, a multiple list of approved books is preferred to a single adoption. Exceptions are made, however, where a sequential program of instruction is fundamental, as for reading and spelling.

8. Textbooks and other instructional materials will be listed as "basal" or "supplementary." Wherever possible these materials will be "written into" the courses of study, and all teachers will be expected to make use of the materials listed as basal. Not all teachers will use the supplementary and enrichment materials.

The reader should take particular note of principles 4 and 8. The "basal" and "supplementary" classification puts an extra burden upon evaluation groups, but such action demands a closer tie with teaching units at various grade levels. In no uncertain terms principle 4 demands decisions by groups, but by all means judgments by those who are to use the materials. Also, while selection for purchase in advance of classroom try-out is permitted, principle 4 stresses selection on the basis of actual use in classroom as the ideal basis. The Rochester system of procedure, as would be expected from a study of the guiding principles, includes, (1) subject-matter councils with key responsibility working under the assistant superintendent in charge of instruction and with the Department of Instructional Materials, (2) selection committees nominated by the councils and appointed by the assistant superintendent, (3) the stipulation that evaluation plans for textbooks and other materials should be worked out by the committees with the director of instructional materials, and (4) a unique purchase plan for motion pictures, based upon actual try-out. By means of this plan motion picture titles selected on the basis of predicted suitability are ordered and paid for, and tried out under normal conditions. Those titles that teachers designate as being desirable are then purchased in quantity, and the subjects that do not meet classroom use standards are then exchanged for slightly used prints of other subjects. Such plans are, of course, understandably unworkable in cases where only one print of a subject is purchased anyway.

Evaluation Forms. To expedite and control the work of evaluation, and to maintain adequate records for future reference, the director needs to develop special evaluation forms that fulfill local conditions. It is best to develop such forms with selection groups or panels, and if the director doesn't already know it, he ought to heed the fact that tedious, interminable forms to fill out will kill teacher participation faster than any other single error. Some directors have decided after proper instruction in evaluation techniques and after providing appropriate written standards as guideposts, or after a classroom try-out, to ask participants to fill out an extremely brief form that calls for the teacher to write the title, check the *accept* or *reject* blank, and sign his name. Other directors use longer, comprehensive, analysis forms.

It should be remembered, however, that evaluation for selection may serve other extremely important purposes such as: (1) in-service education programs where evaluation exercises encourage teachers to think critically about their teaching purposes, student experiences, problem-solving, and teaching unit relationships; (2) promotional programs involving the preparation and distribution of lists and catalogs; and (3) maintenance of adequate record-keeping systems. Thus data relative to grade placement, major teaching purposes for using the materials, course and unit placement of the materials, over-all technical quality, over-all predicted educational effectiveness, and data relative to whether the teaching use will be on an urgent or purely elective basis are of vital importance. In these cases evaluation forms must be more comprehensive in scope. Evaluation often does and should involve the learners, and in these cases forms for this specific purpose need to be made up. However comprehensive or restrictive the scope of a form needs to be, the list of general and specific criteria previously presented should be sufficient as a source of questions. The following examples of film-rating forms are intended to be suggestive of what a director may develop in terms of the general and specific criteria previously presented and in terms of the local situation.

Example 1

TEACHER PREVIEW JUDGMENT[2]

Title of film______________________ Silent?____ Sound?____

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[2] By permission. From Charles F. Hoban, Jr., *Focus on Learning*, American Council on Education, Washington, D.C., 1942, p. 170.

Source of film____________ Name of teacher________________

School________________________ Date ________________

I. What educational purposes can this motion picture assist the teacher to achieve?	Rating	Grade	Course	Unit
1.				
2.				

II. What are the *strong* points of this motion picture?

III. What are the *weak* points of this motion picture?

IV. What *changes* in the motion picture do you suggest?

V. Is this film one that predominantly

_____ 1. Raises questions? Comments: __________
_____ 2. Answers questions? ________________
_____ 3. Does both about equally? ________________
_____ 4. Does neither? ________________

VI. What is your judgment of the film as a whole?

_____ 1. Excellent
_____ 2. Good
_____ 3. Fair
_____ 4. Poor
_____ 5. Useless

VII. From the standpoint of classroom procedure would you use this picture in a unit?

_____ 1. To introduce Comments: __________
_____ 2. To present material during unit ________________
_____ 3. To summarize ________________

VIII. How much, if any, preparation will be needed

1. On the teacher's part? 2. On the student's part?

IX. Photography rating

1 2 3 4 5

X. Sound or title rating

1 2 3 4 5

Example 2

TEACHER JUDGMENT OF USEFULNESS OF EDUCATIONAL MOTION PICTURES[3]

Title of film ________________ Silent? _____ Sound? _____

Source of film ____________ Grade in which used __________

Subject ________________ Unit ________________

Name of teacher __________ School __________ Date ______

I. What *educational purposes* did you expect to achieve in using this motion picture?

II. What were the *strong points* of this motion picture?

III. What were the *weak points* of this motion picture?

IV. From the standpoint of classroom procedure, where did you use this motion picture?

_____ 1. To introduce

_____ 2. To present material during a unit

_____ 3. To summarize

V. What, if anything, was done in preparation for using this motion picture

1. By the teacher?

2. By the students?

VI. What did the students do which indicated that your purposes were or were not fulfilled?

VII. In terms of what you were trying to achieve, what is your *general judgment* of this motion picture?

_____ 1. Excellent

_____ 2. Good

_____ 3. Fair

_____ 4. Poor

_____ 5. Useless

Example 3

STUDENT JUDGMENT OF EDUCATIONAL MOTION PICTURES[4]

Name of student ________________ Boy? _____ Girl? _____

Title of film ________________ Silent? _____ Sound? _____

School ________________ Grade ______ Course ______

Name of teacher ________________ Date ________

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[3] *Ibid.*, p. 171.

[4] *Ibid.*, p. 171.

I. What did you *learn* from this motion picture?

II. What were the *strong points* of this motion picture?

III. What were the *weak points* of this motion picture?

IV. What incidents, parts, or features of the picture did you *like* best?

V. What is your *general judgment* of this motion picture?
_____ 1. Excellent
_____ 2. Good
_____ 3. Fair
_____ 4. Poor
_____ 5. Useless

Example 4

GUIDE FOR EVALUATION OF RECORDINGS[5]

Title of recording ____________________
Rental or purchase source and charge ____________________
Produced by ____________________
Subject collaborator ____________________

USE DATA:

a. Is the recording authentic?
b. With what grades is it to be used?
c. Does it contribute experiences that are beyond those contributed by traditional materials now used?
d. List the outstanding contributions of the recording.
e. What suggestions do you have for its use in connection with the curriculum or unit of study.

FORMAT:

a. Sound (underline one): excellent, good, poor.
Comment:
b. Organization of content (underline one): excellent, good, poor.
Comment:
c. Accompanying study materials:

GENERAL RATING:

Excellent:
Good:
Poor:
Recommended for future use: Yes _____ No _____
Reason:

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[5] By permission. From Walter A. Wittich and Charles F. Schuller, *Activities Manual to Accompany Audio-Visual Materials, Their Nature and Use*, Harper and Brothers, New York, 1953, p. 81.

Example 5: The Sherman Film Evaluation Profile[6] *makes use of a 100-point rating scale for each of the following eleven standards:*

1. Relevancy to curriculum
2. Accuracy and authenticity
3. Organization of content
4. Scope (suitable number of concepts)
5. Suitability of film length
6. Coordination of picture and sound concepts
7. Pupil interest
8. Pupil comprehension
9. Technical quality of picture
10. Technical quality of sound
11. Over-all rating of film (not necessarily an average of the other points)

Example 6:

EVALUATION BLANK[7]

1. Film ________________ Instructor ______________ Date ______
2. Producer ____________________________ Length __________
3. Source __________ Silent _____ Snd _____ Color _____ B&W _____
4. Used in grade ___________________ Subject ________________
5. With unit on ____
6. For use with this unit the film is
   _______ Excellent _______ Good _______ Average _______ Fair
7. Student interest and reaction to the film:
   _______ Excellent _______ Good _______ Average _______ Fair
8. Comments: ____
9. I recommend this film for use in grade ________ subject _________

The acquisition of materials is, of course, a continuous process and one that proceeds more easily as teachers become, through first-hand contact with them, acquainted with an ever-increasing range of available subjects. It is up to the director to obtain these materials, either by purchasing them at a pace permitted by local financial support and the educational demand or by borrowing and renting them.

[6] Mendel Sherman, *An Exploratory Study into the Feasibility of Using Television for Evaluating Instructional Motion Pictures*, Doctoral Dissertation, University of Southern California, Los Angeles, California, 1955 (unpublished).

[7] Charles Crombie, "Film Selection and Evaluation," *Audio-Visual Guide*, Vol. 18, No. 9, 1952, pp. 18–19.

In the smaller school systems, in the case of motion pictures, many more subjects are rented during any one school year than are purchased. Thus, the director needs to develop efficient procedures for purchasing materials as well as for providing a steady stream of materials as requested by teachers from rental or free-loan sources outside the school system. Of course both these aspects of acquisition depend upon critical evaluation procedures as discussed in preceding pages. However, selection for rental purposes may proceed by less rigorous evaluation, since weak materials may be detected during pre-use examination or in actual classroom use situations. Teacher experience with rented materials certainly provides a natural opportunity for building a priority listing of purchase selections. Discussion of efficient procedures for renting and purchasing materials follows in the next two sections.

EFFICIENT PROCEDURES FOR RENTING AND BORROWING MATERIALS

Efficient procedures for ordering and handling materials obtained from sources outside the school system will save time, money, and effort and will promote maximum effective use during periods of limited availability. Directors of audio-visual service programs must decide on two basic methods for handling the rental or the loan of materials. They must either centralize or decentralize the process or devise some workable combination of these two methods.

The Centralization Method. By this method, all orders for materials are collected from teachers, sent out to distributors, received, paid for, delivered to teachers in the various schools according to schedule, collected, and returned to the source on time by the director of audio-visual services. This method provides for full control of all details but adds a tremendous amount of work to the central office staff. Clerical and technical operations are necessary, and the director is likely to get himself bogged down by this one job alone unless his staff is adequate. However, this method may be absolutely necessary unless competent audio-visual building coordinators, or other representatives in each school, are available and are willing to assist.

The Decentralization Method. By this method a representative of the audio-visual service department is delegated to carry out the processes of collecting and sending in orders to outside-the-school sources and thereafter following through with arrangements to use the material, pay for it, send it back, and collect teacher reports if, as ought to be the case, a continuous program of evaluation is being carried on. This method obviously frees the director for more creative work. However, as is often the case, the process gets out of hand with delayed return shipments, nonpayment of bills, over-spent budget allotments, lost or missent materials, and so on. Regardless of the system developed, one thing is certain, and that is that no system will run smoothly and efficiently unless the director gives it his continuous week-to-week attention.

Again, purely local factors will have to be balanced in arriving at an ideal plan of operation. A combination of centralization and decentralization may work. For example, orders for specific materials could be sent through the central office, with deliveries being made directly to the teacher involved or to the audio-visual building coordinator. Under this plan bills could be paid by the central office upon confirmation of receipt by the school involved. High schools and elementary schools in any combination of numbers, all or a few, could operate their own rental programs, depending upon the status of the audio-visual building coordinator. Such coordinators may also carry out just a few selected elements of the total plan of operation. For example, they can arrange for use in the classroom, can pick up materials after use, can collect teacher and student evaluation comments, if necessary, and can return material to the distributor. This is such an important aspect of the entire service program in most schools that the director must see to it that the best possible operational plan for his community is formulated and implemented. It is imperative that his plan of action be based upon a painstaking analysis of the steps in the operation and that all possible labor-saving procedures be employed to economize on time and effort, thus eliminating confusion and exercising control of property whose care is his responsibility. The elements of such a plan require the director to

1. Provide teachers with information about available rental materials through (a) lists of films and other materials rented during previous years, (b) catalog of closest distributor, and (c) comprehensive film sourcebooks conveniently accessible in the school library, teachers rooms, office of principal or audio-visual building coordinator.

2. Provide teachers with easy-to-use ordering sheets, one sheet for each teacher, or arrange to mimeograph the lists in the first step as order sheets with blanks for filling in dates for the coming year. Accompany ordering forms by a school-year calendar form by weeks and months, with vacation periods and school marking periods clearly indicated.

3. Devise a simple but businesslike, mimeographed or printed form letter for ordering titles for needed dates. Make up a form to suit local ordering conditions, giving instructions for invoicing and any rigid stipulations relative to the local business operations. This form could be made up in several copies, or printed as a snap-out form if desirable, so that records of orders for files, for audio-visual coordinator, and for teachers involved would be available. Also a form could be devised that would combine the operations in steps (2) and (3).

4. Compile lists of materials scheduled for each school for each month of the year for which materials have been ordered. Duplicate this list for principals, coordinators, teachers, and operator crews.

5. Arrange a local bill-paying and check-off system, checking off materials as they arrive from distributors, using code numbers or titles so that bills may be matched according to dates to the lists compiled in the preceding fourth step.

6. Arrange to have a receiving system set up in the central office or at the school's receiving office, using lists of the fourth step.

7. Arrange for a delivery and pick-up system on a regular schedule in terms of the lists in step (4), checking off the return shipments and entering the insurance numbers used on the return packages.

8. As described under the evaluation section, arrange with teachers and other school representatives to issue and collect evaluation reports from students and teachers regarding their recommendations for future purchase of the material provided. Have purchase recommendations come in on three levels of urgency; for example (a) buy at once for a specific unit, (b) buy soon, and (c) buy for enrichment purposes.

9. Set up a card file for film-source-data cards of all materials confirmed for purchase according to regular selection procedures. Once a subject has been marked for purchase, do not call in additional report slips. Free teachers from as much detail work and red-tape as possible.

10. Set up the entire ordering plan on a two-level basis. First,

order in April and May for the following school year when teachers can predict accurately the need for a subject in advance. Second, reserve a budgetary allotment for special needs that cannot be anticipated in advance.

11. The director should personally check the operations periodically to see that all involved in the special local plan are carrying out their assigned functions. Facts should be obtained while there is time to take corrective action.

12. Set up a system for collecting information about new material from teachers and other supervisory personnel. Develop a report slip for use by these individuals who send such reports to the director or to the school coordinator.

It was pointed out earlier that collecting recommendations-for-purchase slips as a result of classroom use of rented materials provided a valuable way of obtaining a priority listing of subjects that teachers believe should be owned locally. Such information, coupled with other continuing programs of selection by evaluation panels, subject-matter, or other curriculum committees, facilitates the development of an efficient plan to purchase needed materials.

EFFICIENT PROCEDURES FOR THE PURCHASE OF MATERIALS

One of the basic principles for organizing and operating an audio-visual service program is that a variety of materials should be provided for teachers. Most of the materials commonly distributed by audio-visual service centers must be purchased if they are to be made available at all. The first and foremost essential of efficient handling of a purchase program is long-term planning. Elements of such planning require the director to

1. Set up priority lists for purchase in terms of recommendations made by established selection panels.

2. Establish budgetary allotments for purchase on a proposed five- or ten-year schedule, and adjust totals to be spent each year as fluctuations in financial support demand. (See Chapter Seven.)

3. Maintain flow of rental materials according to need, and provide for replacement of worn or damaged materials.

4. Set up an ordering format specifying that acceptance is subject to the privilege of exchange of materials if defects are noted.

5. Maintain inventory file cards carrying purchase date, descrip-

tion of content, producer, production date, distributor, identifying number or catalog of item, and a print or copy number in case more than one is on hand. When purchased materials are decentralized, such file cards ought to be transferred to the school building involved, especially if capable school-building A-V coordinators are functioning there.

6. Set up an appropriate system for filing the purchase orders for future reference, and incorporate in this an adequate receiving-inspection-report system. The need for such safeguards is obvious, since the cost of replacement copies of some materials (motion picture and filmstrip) is based upon length of ownership.

7. Set up a plan for keeping abreast of new materials. Such a plan could include such elements as (a) appointing a group of "spotters" in various subject-matter fields who would check special journals every month, using a brief, special form for reporting new productions to the director or the school building coordinator; (b) setting up a personal file of up-to-date catalogs and announcements, with titles marked by the director for inclusion in preview sessions of evaluation panels; and encouraging regular study of sourcebooks that are made available in every school library and supervisory office.

A Balanced Purchase-Rental Program. Some audio-visual materials such as maps, filmstrips, and recordings are not available generally on a rental basis. Other materials such as pictorial displays are available only on a loan or rental basis. The director is confronted with the problem of balancing the acquisition of materials through purchase against acquisition by the rental method only in the case of those materials like the motion picture where local, state-wide, regional, and nation-wide distributors make them available on either basis. Striking a balance is a matter of being guided by the principle that a variety of materials should be made available to teachers when they are needed for optimum instructional value. However, in trying to achieve this objective, the director must consider the following important factors:

1. *Convenience.* It is easier to supply materials to teachers from a school source than to order it elsewhere.

2. *Timeliness.* Teachers stand a better chance of getting materials just when they need them when they are in school system or school service centers.

3. *Financial Support.* With an adequate budget the flow of rental materials need not be interrupted while school-owned libraries are being built up. On a limited budget, expensive items such as motion pictures should be rented.

4. *Volume of Use and Cost.* If a $50 film is being rented ten times a year and being paid for at a total cost of $45, including postage, it should obviously be purchased, and moreover it can obviously be afforded at once. Lease-to-own plans also make sense in this connection, but again budget limitations and demands to maintain a flow of needed materials will determine the point at which purchases can be paid for.

5. *Period of Usefulness.* Materials with limited periods of usefulness such as news releases should not be purchased.

6. *Cooperating School Sources.* When nearby school systems arrange to share owned audio-visual materials on a cooperative basis, purchase programs are facilitated. The director should not miss such opportunities for cooperative endeavors. However, agreements and policies need to be written up in businesslike fashion to protect all parties involved.

7. *Required Maintenance of Materials.* Some materials require more maintenance work than others. Motion picture films need to be inspected after each use, spliced, cleaned periodically, and properly housed under normal conditions of temperature and humidity. Such conditions could conceivably have a bearing upon the number of titles purchased.

The director must, as experience demands it, strike the most favorable balance between purchase and rental of materials. The preceding factors, considered in terms of the principle that demands timely service for teachers in accordance with valid instructional needs, will help him find the right answer for the local school community.

THE USE OF SPONSORED MATERIALS

A great many materials are available to school people on a free or free-loan basis. Many of these materials are rich in potential instructional value for teachers and learners, and the director must ascertain whether or not the local school system policies permit the incorporation of free materials into the audio-visual service program.

In connection with this decision, two basic principles should be considered thoroughly. They are: (1) Sponsored materials should be accepted and used only when they contribute to valid teaching purposes; (2) Policies for accepting and handling them should be formulated cooperatively by all concerned. The director must assess such local policies as already exist and if necessary should undertake to encourage the appointment of a representative body to study problems in connection with free and free-loan materials for the purpose of arriving at an over-all administrative policy. The following broad outlines for formulating such a policy for the school system have been stated by the American Association of School Administrators:

1. Define clearly the relation that materials must bear to the basic purposes and objectives of the schools.
2. Provide specific guidelines upon which rules for selection and use can be based.
3. Give assurances to teachers concerning the limits within which they have official backing in the selection and use of materials.
4. Delegate responsibility to appropriate administrative officials or other school personnel for selection and handling of materials.
5. Provide some means of maintaining community confidence in the schools and of safeguarding them against unwarranted pressures.
6. Make available necessary funds so that teachers are not forced to use free materials as substitutes for superior materials that could be purchased.[8]

Whenever appropriate the director should see to it that materials to be deposited for local distribution are properly evaluated and that free materials requested by teachers on a short-term loan basis from distributors other than the school system are previewed before classroom use. Reports of such previews, with the estimate of value, should be collected for the record-keeping system. As a part of over-all school-system policy, or as a part of the audio-visual service policy, selection panels may need to be informed of the necessary safeguards. When such instruction is necessary, it can be provided easily in a widely distributed bulletin. Desirable free materials to be incorporated in the audio-visual services program should, of course, be listed, publicized, and afforded proper curriculum placement.

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[8] By permission. *Choosing Free Materials for Use in the Schools*, The American Association of School Administrators, NEA, 1201 Sixteenth St., N.W., Washington, D.C., 1955, p. 14.

THE SELECTION OF AUDIO-VISUAL EQUIPMENT

The kind and amount of equipment obtained and the way it is made available to teachers is a matter of great importance to the success of the entire service program. This section seeks to guide the prospective director in developing his ability to define and solve problems in evaluating, selecting, planning, and purchasing audio-visual equipment for instruction.

Earlier in this chapter a listing of audio-visual materials was presented together with the kinds of equipment necessary for their instructional use, and the reader should refer to that listing from time to time as necessary. Two important general aspects of the equipment problem are (1) the process of selection, and (2) the standardization of equipment makes.

The Process of Selection. The director must bear the responsibility for deciding what to buy, but those who are to use the equipment deserve the right to participate. In inviting and encouraging participation by an equipment committee, the director does not abdicate; rather he needs to use his own specially developed powers of observation in being a leader of the group. A selection panel, if composed of a physics teacher, a machine-shop teacher, an experienced audio-visual building coordinator or two, a school principal or two, and from two to four elementary and secondary school teachers, ought to be able to come to a sound decision on critical equipment problems working with the director. The director should seek just this kind of participation, and if the evidence turned up is against his own view of what should be done, he should be open-minded enough to accept the decision as the best policy and then execute it to the best of his ability. The director must realize that the pressures to purchase a specific make of projection equipment may be terrific. Many times local and regional distributors can muster strong forces within a community that can result in extremely embarrassing situations; hence, there is a significant advantage in a pooled judgment using all the facts that can be gained from representative participation by skilled observers in competitive demonstrations.

But the job of evaluating and actually selecting a specific make is not the whole problem. Prior to or concurrently with such activity, the equipment-study group should be charged with the formulation of an *operational plan* for handling equipment problems. The director should therefore merge the following or similar elements into the best possible plan for his school system:

1. Secure the appointment by top administrators of an Equipment Selection Panel, and see to it that qualified, impartial, dedicated individuals are chosen.

2. Write up the charge of responsibility for the appointed officials, including authority to reach final decisions in matters of equipment selection.

3. Lead the group to write up and legislate an operational plan including such provisions as (a) procedures for handling competitive demonstrations, (b) procedure for reviewing decisions, (c) a statement of the policy to standarize equipment purchases, or a statement as to nonstandardization as a policy, and how broad or narrow each policy would be, and (d) provisions for expanding the size of the group by calling in additional advisory members from special fields.

These are the crucial matters of process, and the director should consider carefully the pros and cons for standardization and be prepared to discuss this matter, guiding the policy-forming body to a good decision in terms of local conditions. This second general aspect of the equipment problem is considered next.

Standardization of Equipment. By standardization of equipment is meant a firm commitment to the plan to purchase the product of only one manufacturer in each category or kind of equipment. Thus a school system under a standardization policy would own only one make of motion picture projector, only one make of tape recorder, etc. There are a number of important advantages and a few disadvantages to such standardization. The advantages are:

1. It is easier to train teachers and students to operate the equipment; hence less time and effort will be spent by supervisory personnel on this phase of service.

2. There will be fewer operational failures in the classroom because more people will understand how to control the output of the equipment.

3. It is easier to service one make of machine because local servicemen are more familiar with it and understand how to fix or adjust it.

4. It is cheaper to service the machines, since only one set of spare parts needs to be maintained. Less money needs to be tied up in a stock of spare parts during any one year.

5. There is less clerical and technical work involved in maintaining the inventory of spare parts, and in storing, organizing, and finding space for them.

6. Standardization under school-system policy eliminates wrangling with distributors every time an order is sent out for bids.

The disadvantages are:

1. Other manufacturers may develop a piece of equipment of better quality, and the company whose equipment has been standardized may not catch up.

2. The company whose equipment has been standardized may go out of business, with resulting need to get rid of spare parts and change to new equipment.

3. Local or nearby dealers who were depended upon for speedy service may change to another make, or their franchise may be canceled.

4. Dealers for equipment that has been standardized may bid high in competitive bidding, knowing that their equipment will be specified anyway.

Actually, achieving a high level of standardization may require years in any given community because of the present supply of mixed items and because of the usually low budget for replacement. When a director begins his activity in a given school system, he will have to get the facts through a survey or by examination of up-to-date records, and if he works with a policy-forming equipment-selection panel, he may have a real opportunity to study this problem for the purpose of a showdown decision.

But such decisions must be a part of long-term planning. In arriving at any special decision about what equipment to buy, the director must be a penetrating observer in terms of both general and specific criteria. In applying such criteria for the selection of equipment to go on a standardized listing, the decision is all the more critical, and hence the best possible examination conditions ought to be set up, including: (1) competitive demonstrations using identical materials and conditions in the kind of room in which it is to be used normally, (2) actual try-out of equipment under rigorous use for a month, (3) study of manufacturer's manual, (4) actual cleaning processes and adjustment procedures practiced, even to taking the equipment apart and examining its structure, and (5) letting the equipment operate for a few hours if necessary to check temperature and any other critical operating characteristics as clues to proper operation and satisfactory service. These, of course, are the processes for taking action. What are the standards by means of which good judgments of value may be made?

General Criteria for Selection. In judging the value of audio-visual equipment, a number of standards of a general nature that are applicable to all classes or types of equipment may be used to good advantage. Such standards or criteria apply, of course, only to the usual classroom type of equipment and then only to the more commonly used types. However, one or more of the general criteria apply to units of all kinds of audio-visual equipment, regardless of their purpose and location for service. Each of these criteria is now explained in terms of its utility for judgments:

1. *Portability.* Questions that need to be answered are: Is the piece of equipment easy to handle and move around? Is it reasonably light in weight in comparison with others? Is it compact? Are handles placed conveniently for easy carrying and lifting? (Example: A motion picture projector for classroom use should be light enough to be carried, lifted up, and placed on a projection stand by either teacher or pupils.)

2. *Ruggedness.* Questions that need to be answered are: Will this piece of equipment give good operating service with a minimum of trouble? Does it have a sturdy appearance? Is it free of vibration during operation? Are the joints, supports, braces, and connections tight and strong? Is the construction material appropriate and heavy enough? Are the carrying handles anchored securely? Are the control mechanisms strong? (Example: A slide projector was found to have an insecure base because of a loosely made joint, and another projector was rejected because of too many plastic parts.)

3. *Cost.* The main question is: In comparison with others, and in terms of other criteria, is the cost reasonable and competitive?

4. *Ease of Operation.* The main questions are: Can teachers and students operate the equipment effectively? In general, is operation of the equipment easy to teach? Are the control mechanisms easy to

use? Are the control mechanisms few in number? Are the controls accessible, in full view, and plainly marked? Is the equipment free of operating peculiarities such as loose parts that have to be removed and reinserted? (Example: Sometimes control switches are too hard to turn on and off.)

5. *Quality of Performance.* The important questions are: How well does the equipment meet desirable performance standards? That is, whatever the equipment is supposed to do, does it do it well? Can the equipment be depended upon to perform at desirable levels consistently? (Example: A filmstrip projector must project a bright field of light, evenly focused, on the screen. This is its desired performance. Comparisons of both illumination and focus are easily obtained.)

6. *Effective Design.* The questions are as follows: Is the design attractive? Is it free of unfinished or rough exterior parts? Is it free of imperfections and errors in construction? Is the finish functional and attractive? Is the finish easily marred? Was the equipment designed with school use in mind? (Example: One 2-inch by 2-inch slide projector was rejected because slides dropped into a small case, and this served as a restricting factor in its operation. Boxes would, of course, have to be removed and reinserted.)

7. *Ease of Maintenance and Repair.* Questions that need to be answered are: Can the necessary minor adjustments be made easily and quickly? Are parts that need cleaning frequently conveniently accessible? Are the parts standard and easily available for purchase? Is it easy to remove the sections likely to need repair, that is, without complete disassembly? (Example: Projectors ought to come apart easily for repairs, and lenses need to be kept clean. Some lenses are too hard to get out and too hard to put back correctly.)

8. *Reputation of Manufacturer.* Is production of school equipment a major concern of the company? Is the research, planning, and development record of the company favorable? Is it likely that the company will continue in business for the school field? Are the manufacturer's personnel policies and his relationship with dealers commendable? (Example: One manufacturer has introduced and then discontinued the supply of several items of classroom equipment.)

9. *Local Equipment Status.* The following questions should be raised: Is it worth while to switch to new equipment when switching means replacement of all similar units presently owned? (Example:

Turning in equipment ahead of its normal replacement time is expensive. Gains in quality must be commensurate.)

10. *Available Service.* Are repair and emergency service facilities nearby? Are adequate stocks of spare parts maintained locally? (Example: It is expensive to ship equipment away for repairs, and if this is necessary, service to schools may have to be interrupted.)

The general standards just defined have to be applied, of course, in full knowledge of how an audio-visual service program functions in the schools. Equipment selection problems can be solved only in terms of how teachers use it in their day-to-day work. Some producers design and manufacture equipment units for the "home" market. Since the functional logic of manufacturing procedures is entirely different, directors need to discern the differences in the requirements of the home and school markets, and they must make sure that their own interests are being protected. The director obviously has to deepen his understanding of construction procedures, and he ought to gain experience in predicting what will and will not be serviceable in the long run. However desirable it may be, the director cannot organize, maintain, and operate a *bureau of standards.* Hence, he needs to marshal sufficient help (and he should not hesitate to call the projectionist at the local theatre) in making sure that his judgments are accurate, and he needs to consider specific criteria for specific kinds of equipment. These are dealt with in the next section.

Specific Criteria for Selection of Equipment. In this section specific criteria are stated and questions are raised to guide the evaluator in making value judgments in connection with various types of equipment. The important general criteria should not be lost sight of in the subsequent statements.

Criteria for Motion Picture Projectors:

1. *Noise.* Does the projector operate quietly? Motor? Film Shuttle? Blower? Switches?
2. *Steadiness of Picture.* Is projected picture free of noticeable flicker?
3. *Controls.* Are controls sufficient for the intended use? Does "tone" control bring out bass and treble sounds sufficiently?
4. *Electronics.* Is sound from speaker free of motor and projector noise at high-volume levels?

5. *Magnetic Sound.* Are provisions for mixing music and voice adequate? Do splices run over playback head without distortion?
6. Refer also to general criteria.

Recommendations for Tests: Employ standard test films for determination of faithful reproduction of wide-range music, picture steadiness, uniformity of picture brightness, flutter, frequency response, and dialogue intelligibility as follows: Society of Motion Picture and Television Engineers, 55 West 42nd St., New York, N.Y., "Magnetic Signal Level Test Film," MT6SL, and the 16-mm "Jiffy" test film. All tests of competitive projectors should be made under the same conditions with the same films. Other test films are also available from this source.[9]

Criteria for Regular Slide Projectors:

1. *Balance.* Is the base long enough to keep the projector in balance even though the bellows is extended?
2. *Tilt Device.* Is there an easy-to-operate vertical and horizontal tilting mechanism?
3. *Ventilation.* If a blower is not provided, is ventilation adequate for normal uses?
4. *Noise.* If blower is provided, does it operate effectively and quietly?
5. Refer also to general criteria.

Recommendations for Tests: Use same test slides for all competitors. Employ slides with critical focusing content such as small letters.

Criteria for Overhead Slide Projectors:

1. *Projection Stage.* Will the projection stage accommodate a 4-inch by 7-inch slide?
2. *Flashmeter Adaptability.* Will the lens arrangement accommodate flashmeters for short exposure work?
3. *Blower.* Is the projector equipped with a blower that operates effectively?
4. *Illumination.* Will the lamphouse accommodate a 750-watt lamp safely?

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[9] Write to SMPTE for catalogue of 16-mm and 35-mm test films.

5. Refer also to general criteria.

Recommendations for Tests: Same as for slide projectors, but request flashmeter demonstration also, with a variety of slides, in a lighted room.

Criteria for the Selection of Opaque Projectors

1. *Size of Opening for Projected Material.* Is a 10-inch by 10-inch opening approximately correct for the type of material that is to be used? Is a 7-inch by 7-inch opening nearer the size of the material intended for use in the projector?
2. *Size of Projected Image.* Will the projector project a picture in sharp focus of the size desirable for the rooms where the projector will be used? (If not, are extra lenses available?)
3. Refer also to general criteria.

Recommendations for Tests: Conduct the tests during the daytime under conditions intended for use of the projectors. Use a variety of materials (mounted and unmounted pictures, and books.)

Criteria for Combination Filmstrip and 2-inch by 2-inch Slide Projectors:

1. *Convenience in Change-over.* Are the change-over parts easy to remove and insert correctly?
2. *Accessories.* Are automatic take-up mechanisms for filmstrips removable? May the projector be manually operated with standard slide changer?
3. *Restrictions on User.* Is the projectionist free to project his materials in his own way, with his own selection pattern, without restrictions and extra techniques.
4. *Framing Device.* Are framing mechanisms sturdily constructed, and properly braced?
5. *Automatic Features.* If the projector is of the automatic type: Is remote control operation possible and at the sole direction of the projectionist? If slide magazines are to be used, will mechanism accommodate paper mounts, glass, and metal-bound slides intermixed?
6. *Tilt Devices.* Does projector provide horizontal and vertical tilting devices?

7. *Lenses.* Are additional lenses available to permit a variety of picture sizes as needed?
8. *Ventilation.* Is blower operation adequate? Is projector free of defects that tend to shatter heat-filter glasses?
9. *Temperature.* Is adequate light output achieved together with desirable low-temperature at the point where slides and filmstrips are inserted? At highest wattage operating levels, are materials spared the effect of buckling and warping?
10. Refer also to general criteria.

Recommendations for Tests: Use slides and filmstrips with small details for sharp focus tests. Arrange for large-screen projection if possible. Take illumination readings, or judge visually the evenness of spread of light and sharpness of focus.

Criteria for Selection of Record Players:

1. *Range of Use.* Does player have a microphone input for public address use? An extra speaker output for wider sound distribution? Will the player accommodate records at the four standard speeds?
2. *Controls.* Are controls simple to operate? In plain view? Plainly marked?
3. *Cartridges.* Are cartridges easy to replace? Will the player accept standard makes of cartridges?
4. *Sound Quality Standards* (for each or all components). Is uniform frequency response range adequate for the use intended? (In general, the wider the spread in cycles and the fewer the number of decibels stated, the better.) Is the electronics system free of excessive distortion? (In general, the lower the percentage expressed, the better.) Is the turntable speed free of excessive "wow" or "flutter"? (The lower percentage figure expressed, the better.)
5. Refer also to general criteria.

Recommendations for Tests: Use voice records for intelligibility tests, sustained musical tones for "wow" or "flutter," and violin tones for frequency tests. Employ, wherever possible, standard audio test records as follows: (a) Phono-Test Record obtained from B. Dubbings Co., 41-10 45th St., Long Island City, N.Y., and (b) N-A Beam Test Record for Distortion and Frequency and Intermodulation Test Record, Cook Laboratories, Stamford, Conn.

Criteria for Selection of Tape Recorders:

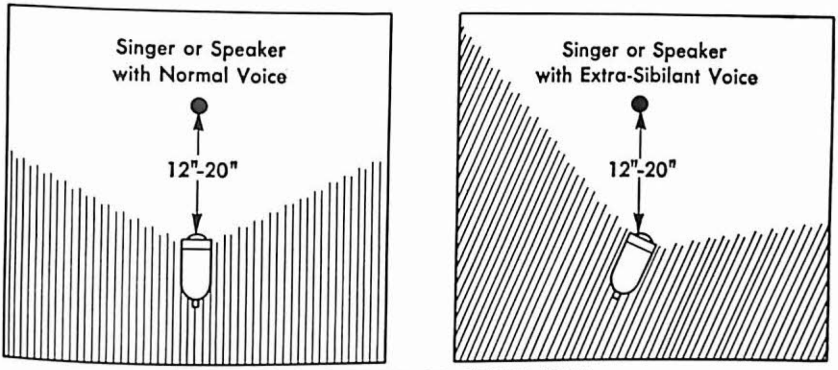
1. *Position of Heads.* Can heads be reached easily for cleaning? Are heads easily accessible for realignment?
2. *Adjustment of control Mechanisms.* Are drive and rewind mechanisms conveniently accessible for cleaning and adjusting?
3. *Sound Quality Standards* (for each or all components). Same as for record players. Also, does the recorder have a satisfactory signal-to-noise ratio? (The larger the number of decibels, the better.)
4. Refer also to general criteria.

Recommendations for Tests: Use voice, sustained musical tones, and violin music tapes for tests as described for record players. Employ also Audio Head Alignment Tape for special tests, procurable from Audio Devices, Inc., 444 Madison Ave., New York, N.Y.

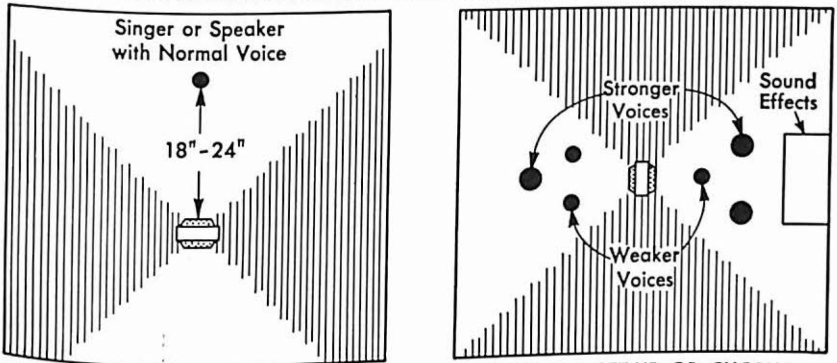
Criteria for Selecting Projection Tables:

1. *Mobility.* Does table come equipped with 4-inch casters, one for each leg? Do casters have rubber tires? Do two of the four casters have locking devices?
2. *Noise.* Does the table roll quietly without vibration?
3. *Level.* Does the table stand level? Do the casters fit properly so as to make the table stand evenly on all four legs?
4. *Height.* Is the height appropriate for the equipment to be used on it?
5. Refer also to general criteria.

The director who can discuss important differences in equipment in terms of the general and specific criteria just described will obviously have to be quite an experienced equipment technician. Such status and competence, if a director lacks it and wants to gain it, could doubtless be compounded by close observation of exhibits at audio-visual conferences, laboratory work in formal audio-visual courses, study of manufacturers' manuals, and by actual experiencing in many other problem situations providing strong motives for careful investigation. The director will probably not have the time, but with a minimum of a college course in physics as a background he could accelerate the process by spending a week at a manufacturer's factory, at the

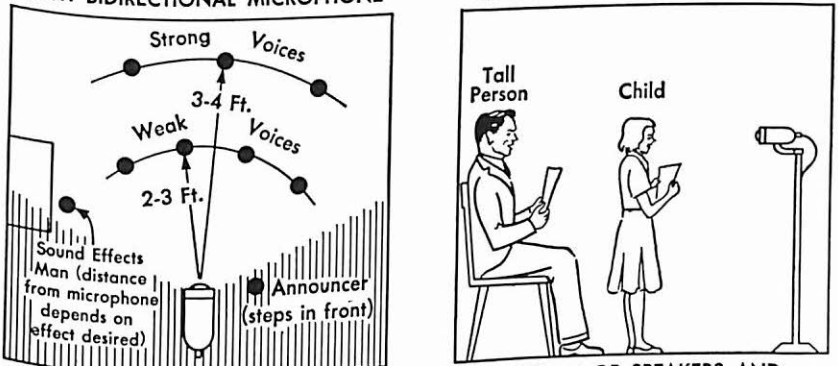


SINGLE SPEAKER OR SINGER WITH
OMNIDIRECTIONAL MICROPHONE IN HORIZONTAL POSITION



SINGLE SPEAKER OR SINGER
WITH BIDIRECTIONAL MICROPHONE

DRAMATIC SET-UP OR CHORUS
WITH BIDIRECTIONAL MICROPHONE


Strong Voices
3-4 Ft.
Weak Voices
2-3 Ft.
Sound Effects Man (distance from microphone depends on effect desired)
Announcer (steps in front)
Tall Person
Child

DRAMATIC SET-UP OR CHORUS
WITH OMNIDIRECTIONAL MICROPHONE

HEIGHT OF SPEAKERS AND
MICROPHONE

Fig. 4–1. Diagrams like these should be included in handbooks or bulletins on recording procedures. Could such setups be easily demonstrated at teachers' meetings? When does a low-impedance microphone have an important advantage over the high-impedance variety? *(Courtesy Audio-Devices, Inc., New York City.)*

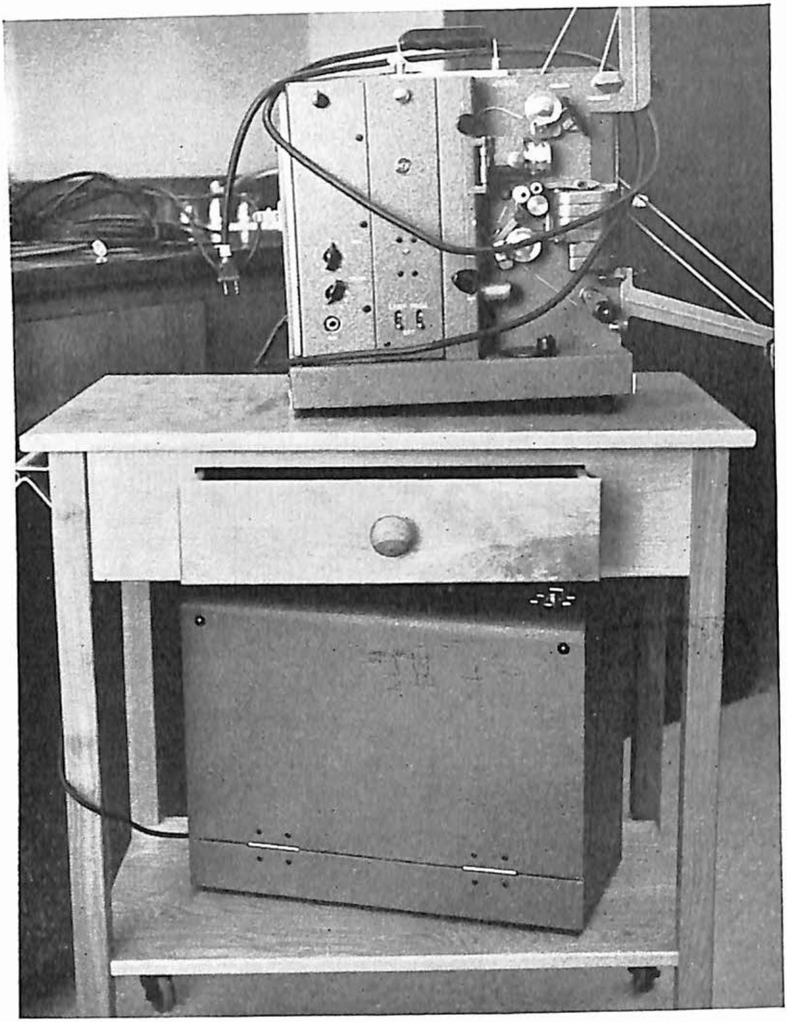


Fig. 4–2. Mobile projection stands, whether manufactured commercially or fabricated locally in school shops (as was the case in the above example), are urgently needed in every school building. ***(Courtesy Dallas Independent School District.)***

nearest audio-visual dealer's repair shop, or at a university or nearby city audio-visual service center.

One vital word of caution is necessary. Whatever else the director is or is not, he must not become a repairman. Any director who spends his time probing for electronic difficulties should be charged with dereliction of duty. He should organize student crews for minor adjustments and cleaning and should arrange for service contracts with nearby agencies, but to be a repairman himself is to waste the school-system's tax dollars. In one unusual case, a director, capable technically, is employed by a local school authority on the basis of special salary payments during a month of his summer vacation period to give all equipment units a thorough cleaning and overhaul. The important thing to note is that this work is done when schools are not in session.

Once a director has made the best possible selection of equipment, there still remains the critical job of buying it. Getting the specified purchases delivered on time, by the dealer of your choice, and for the budgeted amounts may in many cases prove to be difficult. The next section, therefore, deals with this aspect of the equipment problem.

EFFICIENT PURCHASE PROCEDURES FOR EQUIPMENT

Although the director frequently must abide by rigidly prescribed purchasing procedures as to format, bids, and awards, he can nevertheless set up controls based on his own specialized knowledge that will achieve his objectives. Each of these controls deserves separate consideration.

Long-Term Planning. A thoughtfully prepared plan for purchasing equipment on a priority basis is one of the most important controls for meeting equipment needs. Getting the right equipment at the right time demands planning, and splitting up an equipment budget allotment ought to be done in terms of carefully selected equipment units that are going to meet specific instructional needs. A five-year purchase plan permits a good deal of perspective, while at the same time presenting more easily achievable goals than a ten-year plan. A long-term plan, in addition to focusing attention on future goals, facilitates thinking about the important problem of equipment replacement. More will be said about long-term planning and replacement in a later chapter when dealing with the topic of budgeting for audio-visual services.

Equipment Specifications. Directors frequently make major errors in ordering equipment units by not writing specifications properly. While purchase on the basis of public bids makes this problem even more critical, the director safeguards his own and the public's interest by giving due attention to complete information. In case the director can name the make he has selected, he should include on the requisition or order the following, as appropriate: (a) make, model, number, acceptable serial number, and names of all accessories with identifying catalog numbers. All details of construction including description of materials, manufacturer, weights, colors, etc., ought to be painstakingly added when purchases have to be fabricated. As is the case with classroom light-control systems, not only construction details should be specified, but strict mounting or installation specifications should be given as well. The director who thinks everyone understands what he wants and will give it to him whether or not it is specified is naïve.

Some central purchasing agencies call for publicly advertised bids on all purchases over $1,000 and will not permit the specifying of a brand name unless the term *or equal* is added. This forces the director to (1) write specifications in terms of construction characteristics (as, for example, specifying the three-claw, film pull-down mechanism of the Ampro motion picture projector, or some other unique feature not possessed by competitive products); (2) plan in advance and accompany the requisition with a letter stating the reasons why none other than the single make specified can be used; or (3) take formal steps to have the product specified made standard officially by the central purchasing authority. While difficult, step three will probably be most satisfactory in the long run.

Serial Numbers. As is sometimes the case, new models of a particular make are about to be released at the time orders are being placed. Dealers, having bid on old models, may feel no compulsion to supply the newer and sometimes improved product, especially if bids are highly competitive. Directors should, therefore, make sure that serial numbers of current-year models and information about release dates of new models are ascertained in advance. With such facts at hand he can then specify the lower limit of serial numbers of equipment units that will be acceptable.

Conditions for Purchase. A number of interesting tactics may be employed in directing orders to bona fide local dealers who have given notable services to the schools and to the field in general. Chief among these conditions of purchase, and of course wholly ethical, is the specified service arrangement that the metropolitan "warehouse" merchants cannot meet. Conditions of purchase are many, and the director should use imagination in devising them and discretion in using them. Some examples are as follows: (1) specifying free service for six months beyond factory guarantee, except for replacement of parts; (2) specifying free-loan of equipment during emergency repair periods, (3) specifying that the seller must maintain on premises a full stock of spare parts for the equipment purchased, (4) specifying that purchased equipment must be delivered, set up, and operated satisfactorily by the dealer or his salesman prior to acceptance, (5) specifying in the request for quotations that the seller, or one of his salesmen, must conduct a demonstration meeting and/or operation clinic for teachers prior to acceptance of merchandise, (6) specifying that seller must pick up trade-in equipment described in purchase contract; and, of course, there are many others. The practice of trading in out-worn or obsolete equipment units, not necessarily of the same type as the product being purchased, is highly recommended. It clears the storage shelves of inactive items, thus streamlining the inventory, and as an adjunct of the regular replacement plan it increases the purchasing power of capital outlay allotments. Thus, the director ought to save his outmoded equipment for this suggested use. And, of course, as has just been said, the "trade-in" plan might be an important factor in setting special conditions for purchase.

SUGGESTED ACTIVITIES

1. Criticize the definition of *audio-visual materials* as given in this chapter. Are field trips and dramatic performances involving people in line with this definition? What categories could you use in classifying the kinds of audio-visual material presented?

* 2. Using the general and specific criteria for the evaluation of materials as presented in this chapter, construct a long and short version of a form for any one of the audio-visual materials of your choice. Members of the class can choose different materials and pool their efforts, working as committees. Results can be mimeographed and a set of forms prepared for each member for each type of material.

3. Under what conditions, if any, should the A-V director recommend the use of sponsored (free) audio-visual materials?

4. Apart from such items as filmstrips, maps, and motion pictures, what expendable supplies do you feel it necessary to stock for distribution upon request?

* 5. Show how you would elicit, collect, and utilize the suggestions of teachers in matters pertaining to the selection and purchase (or rental) of materials.

* 6. Devise a plan for efficient handling of rental materials, from the form for ordering them to their eventual return to the source.

7. What are the basic types of material that you would like to distribute in quantity from a public-school service center?

8. Using your own local school system, or any other hypothetical situation, apply as many as you can of the criteria for determining which of the following services to add to an already existing program. Assume that sets of study prints, cases of realia, and magnetic tape and disk recordings are not presently among the materials being distributed.

* 9. Write out a requisition for five plastic drape systems (window size, 8 feet by 30 feet); and seventy roller shades for regular windows (3 feet by 8 feet). Include all necessary specifications as to materials and construction.

10. Familiarize yourself with at least three main sourcebooks of audio-visual materials. What are some strengths and weaknesses in these publications?

* 11. Pretend that you are writing an evaluation of a new film for publication. Follow instructions and the evaluation form given in class, or make up a form using the general and specific criteria mentioned in the chapter. The film selected by the instructor will be shown twice. Take notes and then complete the report. Synopsis and purpose sections are not to exceed seventy-five words each. (When preparing evaluations for publication, it is customary to include a brief synopsis.)

12. What are the advantages and disadvantages of "standardization" of equipment? What precautions can you take to minimize the effects of the disadvantages?

* 13. Using selected general and specific criteria for the evaluation of equipment presented in this chapter, evaluate in teams two makes of as many kinds of audio-visual equipment as you have time for and as many as your instructor feels it important to present for analysis.

* 14. How would you defend your choice of a particular kind of projector in a "fight" over bids, two years after a "standardization" decision, when *another make of projector* is being forced upon you by a purchasing agent who can get it at a "price"?

* 15. Use any standard requisition form, or the one supplied you in class, and write out a proper requisition for twenty combination filmstrip

and 2-inch by 2-inch slide projectors of any make specified by you. (Employ all the ethical tactics you know of and can devise to safeguard your own interests and to direct the award to proper distributors.)

* 16. Using the Rochester Public Schools principles for selecting materials, formulate any appropriate specific set of procedures for implementing them. Assume for the time being that these principles were developed in your own community. How would the "democratic conscience" influence your procedures?

17. By what system are audio-visual materials rented in your own school community? How would you improve it?

* 18. What would be the advantage of arranging to share audio-visual materials with a nearby school community? What precaution should be taken? What policies formulated?

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CHAPTER FIVE

FACILITATING THE USE OF MATERIALS

It is not fully recognized that one of the crucial problems in conducting an audio-visual services program is to stimulate use of materials by most of the teachers for whom and by whom the materials were selected. Directors should certainly get the facts about the status of their own local levels of use by comparing present volume of distribution with potential or desirable volume. If this is done, directors will not be likely to commit the error of taking false pride in what to the uninitiated observer seems like a commendable volume of requests and service. As a result of an important study made in 1949 for his own community, Reed[1] drew the following rather startling conclusion: "The sound film program was having little or no effect upon half of the teachers for whom it had been developed." One would be inclined to assume that once a service is provided, teachers would use it avidly. That this is not the case need not be discouraging, but by knowing it, the alert director may be led to make an analysis that will have a far-reaching influence on the success of his program of service.

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[1] Paul C. Reed, *A Study of the Use Made of a Group of Sound Motion Pictures in Relation to the Administration of the Department of Visual and Radio Education, Rochester Public Schools*, School of Education, Syracuse University, Syracuse, N.Y., 1950 (unpublished Master's thesis).

In Chapter Three the emphasis was upon the identification of needs and on teaching teachers how to use material effectively. If this work is done adequately, teachers will feel a new security because of the skills developed, and hence may be more easily led toward optimum use of the materials provided. In this chapter the main emphasis is upon facilitation, that is, upon a genuine effort to provide an environment conducive to the effective and efficient use of audio-visual materials by all teachers who *should* use them. The director is therefore now confronted with a new cluster of problems, and the first of these is to develop a system for publicizing material that meets local needs.

THE SYSTEM FOR PUBLICIZING MATERIALS

Adequate information about available audio-visual materials is one of the basic routes to the facilitation of their use. Ideally, information about materials must be general, specific, up to date, easy to use, accurate, and repetitive. Any system developed for the publicity of materials ought to meet these conditions and at the same time be feasible locally. Information needs to be general as well as specific. That is, teachers need to know in a comprehensive way just what is available for everybody and for all subjects. Only then will they be likely to know what all the resources are for special plans. Information is specific when it explains what materials have been designated for each subject, for teaching units, for specific experiences and problems, or for problem areas. Information needs to be repetitive as well as up to date, accurate, and easy to use. This means that the information should be brought to the attention of teachers again and again, probably through different approaches; as, for example, not only in a catalog but also in curriculum guides and special listings. Furthermore the information must undergo periodic revisions, the entries must be accurately made as to title and descriptive details, and the information must be presented in easy-to-use format. For example, it is common practice to revise a catalog by a supplement or by listings in news bulletins. Such announcements and supplements after a time, however, become exceedingly difficult to use. A system for adequate publicity may well demand a schedule of the following publications and procedures:

1. Publish a comprehensive catalog and provide a copy for each teacher; revise it and re-issue it every other year, and keep it up to date on an annual basis by a supplement alternating with the catalog.

2. Prepare and send to teachers one or more specific listings correlating available titles of material with the teaching units, courses, curriculum guides, and outlines that have been developed for teacher use. Revise such lists by supplement sheets, advising teachers to add subjects to basic lists for two years. (To make such a detailed and complex program possible, the actual work of writing, listing, and correlating may have to be done by subject-matter, grade, or other divisional groups on a cooperative basis.)

3. Prepare or work with others on the preparation of curriculum guides and outlines incorporating the suggested basic and supplementary titles of audio-visual materials as available from central sources.

4. Incorporate topical file cards in every school-library card catalog, indicating centrally available filmstrips, picture sets, and motion pictures.

5. Prepare and distribute special lists of materials being rented or borrowed, by grades and/or subject, based upon the programs in the individual schools.

6. Publish a News Bulletin on a strict schedule, preferably in two editions, one for elementary and one for secondary school teachers, four times each school year; this should be prepared at the central audio-visual headquarters. This publication should emphasize new groupings of material, round-ups of new materials for grades and subjects, and should report interesting case studies of materials being used with outstanding results.

7. Encourage preparation of reports and announcements by other curriculum specialists to call attention to audio-visual materials in achieving objectives for special programs and areas.

8. Obtain and distribute a set of commercially available sourcebooks to each school library.

Such a comprehensive system for publicizing materials at first glance may seem to propose an unreasonably increased work load, and it certainly means exactly this if the director is to be a committee of one person to do it all. Once more for emphasis, publicizing information is a necessity, and the system for accomplishing it will have to arise out of the local complex of conditions. The director needs to be capable of striking a balance in taking appropriate action, for to put all his time into publicity at the expense of vital in-service education and other routes to facilitation could not only result in wasted time and effort but also bring injury to children and an eventual public attack upon the local instructional program.

Any system for publicizing materials that is developed in any community should start with the first essential, namely, the catalog. Two basic kinds of catalog are in use, and each opens up its own array of possibilities and problems. These are the card catalog and the list catalog. Each of the two catalog methods must be as fully descriptive as is permitted by time, staff, and financial support.

Card-Type Catalog and Processes. When the card catalog method is adopted, the director must arrange to supply appropriate steel or wood file cabinets to each school (see Fig. 5–1) together with a complete set of descriptive cards made up of all the multiple copies of cards for each title of every film, filmstrip, picture set, model, diorama, etc. To make up a master file, such cards need to be filed alphabetically according to the first principal word in the title, then filed again and again under other categories such as courses of study, subject-matter fields, grade levels, local topical arrangement, and course units, if space permits. Thus for any given filmstrip, for example, a card bearing the same information would have to be filed under each of the alphabetically arranged sections. Very rarely, however, are card catalogs cross-referenced as comprehensively as just indicated because of limitations in the size of filing cabinets, and the time, money, and work required in printing and processing the cards.

For maximum value to teachers, each card should include full data such as synopsis of content; physical characteristics such as running time, frames or number of pictures in the set, size, etc.; producer and date; and other relationships such as unit, course, grade, and basal or supplementary designations. Cards for different materials ought to be color-coded, that is, blue for one kind of material, white, green, red, etc., for others. Card catalogs are kept up to date by issuing the right number of cards for each new title of material, so

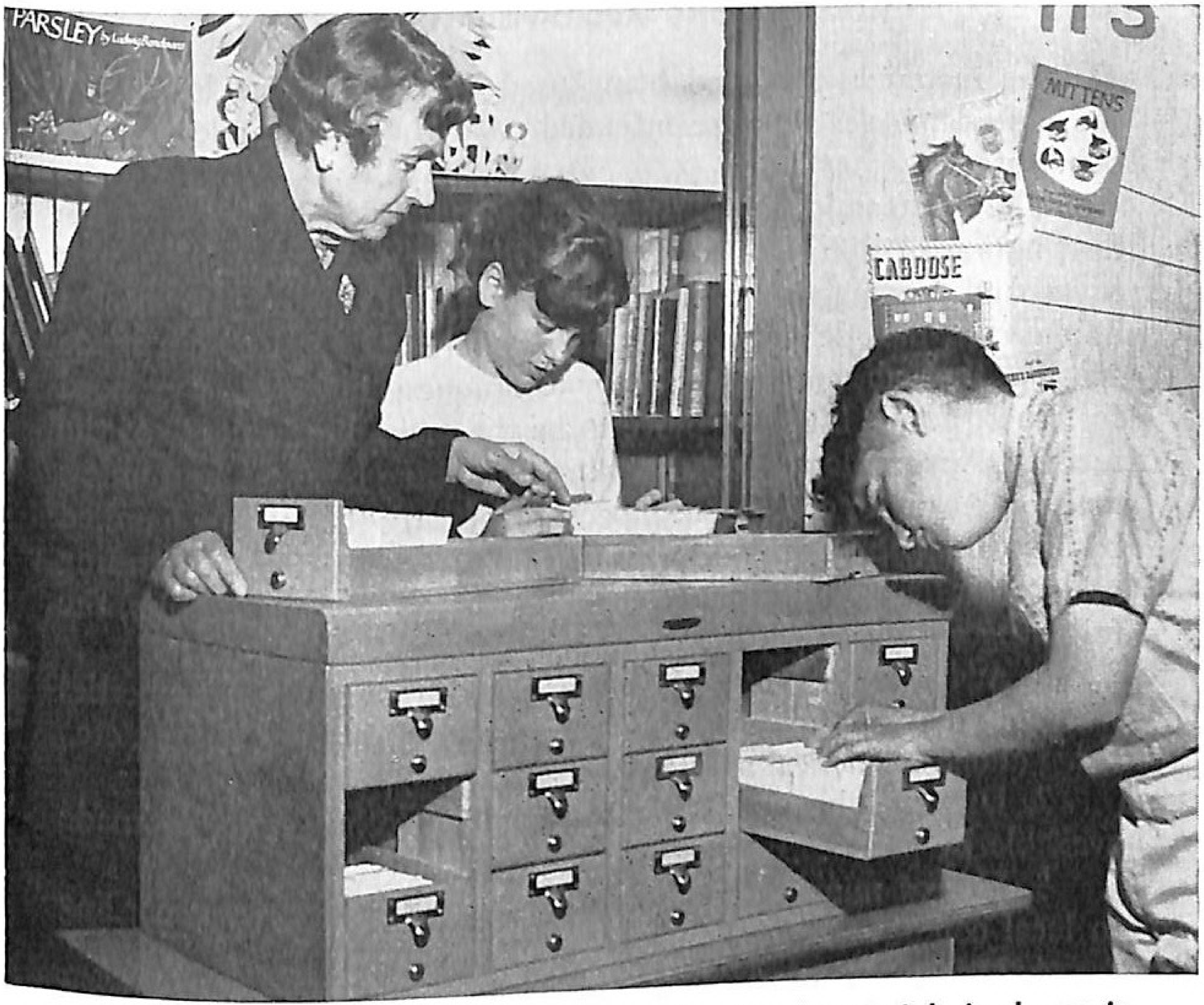


Fig. 5–1. **This card-catalog system for audio-visual materials is shown in use at the Hawthorne Elementary School.** ***(Courtesy Department of Audio-Visual Education, San Francisco Unified School District.)***

that appropriate cross-referencing may be accomplished in the file at each school.

The adequacy of such a method must be judged in terms of the following critical questions: How convenient is it for teachers to use the file cabinet if only one is placed in his or her school building? How many card file cabinets are really needed in each school building? Can provisions be made to send appropriate cards to individual teachers also and thus reduce the otherwise necessary cross-referencing in the file? How do teachers react to the system where it is presently in use? What other specific elements in the system of publicizing materials are feasible and necessary with the card catalog method?

Are the materials cataloged being used by the teachers for whom the materials selected were intended? Are the card catalogs really being used?

The card catalog system may, of course, be combined with the distribution of different kinds of title lists or specialized groupings to aid and encourage teachers to seek additional needed information in the card files. It is obvious that general card catalogs are made specific through cross-referencing techniques; however, the need for other specific lists may prove to be the main disadvantage of the method. Any catalog process is a time-consuming business, and unless a plan is set up for continuous processing of cards that can be handled by clerical assistants, the director will be prevented from performing other urgently needed tasks. In the process of preparing card files, the following are the important elements:

1. Adaptation of a standard format, with all physical properties such as size of picture, running time, number of slides in the set, etc., being added by clerical assistants.
2. Use of Library of Congress cards or other cards as made available by producers, where available and serviceable.
3. Use of mimeograph or regular printing processes according to local conditions.
4. Utilization of preview and evaluation report forms from teacher selection groups that will provide items of information for immediate transfer to the cards.
5. Establishment of a color-code system for materials.
6. Establishment of a standard cross-referencing code for the director or the professional assistant to use in preparing the cross-referencing schedule for each card, depending upon the nature and content of the title.

List-Type Catalogs. The main advantage of the list-type catalog is its immediate availability for use by each teacher anywhere, anytime. Like the card catalog method the list-type catalog may also be made general and specific; that is, general in its comprehensiveness in listing and describing all materials, and specific in its classification system. Of course the more functional and specific the groupings become, the larger the book and the more expensive its preparation. The list-type catalog, however, lends itself admirably to one other method for issuing a catalog that is specific; that is the method of splitting up the catalog into appropriate subdivisions such as Secondary-School Science, Junior High School, Elementary School Social Studies, Foreign Language, or any other combination of specific lists that meets local demands. This, of course, could be done also by the card-type catalogs, and if the card system is to be used effectively, this is what must be done. Comprehensive catalogs in order to be helpful and convenient to use ought to incorporate the following features:

1. *An attractive, consistent format throughout.* The director should see to it that cover paper and designs are appropriate and that the binding will stand hard usage. (See Fig. 5–2.) Catalog planners should not forget that high school art students may be encouraged to cooperate in making attractive designs for covers.

2. *An adequate, introductory section,* detailing the specified ordering procedures and the policies under which service is given.

3. A *topical index* that is as functional for teachers as possible. The director has a real opportunity to make up unique topical headings in terms of local school subjects, courses, grade levels, problem areas, special programs, etc., or he can resort to a standard classification procedure. At any rate he has but to turn to any of the easily available catalogs or source books to discover examples of procedure.

4. A *classification section* where individual titles of material, properly coded as to type, are listed under each of the topics selected.

5. *One or more sections of color-coded paper* giving descriptions of content of each title in alphabetical order. If the catalog lists all the kinds of material distributed, motion pictures could be in the white section, filmstrips in green, exhibits in red, picture sets in blue, etc. Descriptions and other details offering helpful clues to teachers as to value ought to be as complete as can be afforded in time, staff, money, and other duties.

The director should make the catalog up in terms of a system of information, that is, in terms of other elements of the publicizing program. This is important because the catalog is the largest work assignment in that system. The nature of additional specific listings that are issued regularly will help the director to decide on how broadly or specifically information should be handled. The director may, of course, be limited to one publication for each teacher. In this case it seems that a split-up of the information for elementary and secondary levels would be called for. Examples of how audio-visual

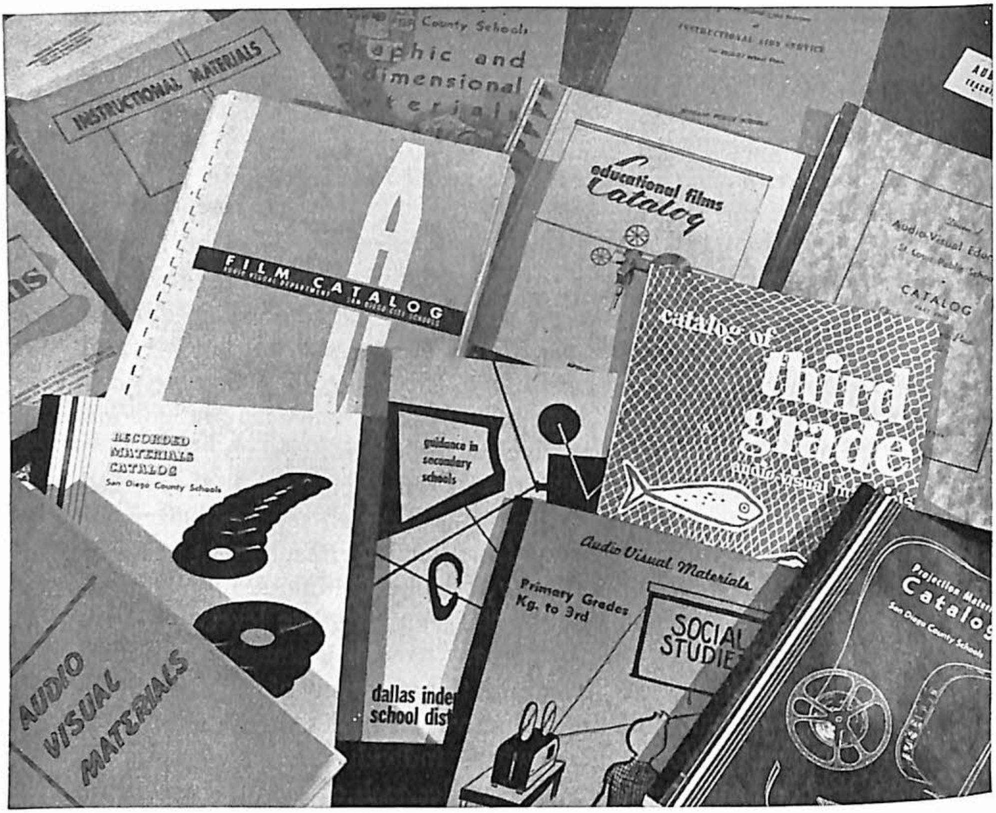


Fig. 5–2. A collection of list-type catalogs showing variety in design, color, binding, and in degree of comprehensiveness.

service centers have solved their problems of publicizing materials follow:

Example No. 1

PORTLAND, OREGON:

The Portland Public Schools' Instructional Materials Center issues one comprehensive catalog that lists and describes all the audio-visual materials distributed. Separate catalogs are issued for Elementary Books, Secondary Books, Community Resources, and for Radio. The design of the catalog is as follows: (1) an introductory section deals with the Center's role, available audio-visual materials, instructions for using the catalog, ordering materials, delivery schedules, audio-visual methods, coordinators and duties, tips on operation of equipment and caring for materials; (2) a complete subject index follows that lists the titles, under appropriate subject headings, of all audio-visual materials such as exhibits and kits, study print sets, motion pictures, filmstrips, lantern slides, and transcriptions, complete with page references to the descriptive section for each entry; and (3) a descriptive section provides a description of each title as to content, recommended grade level, physical details, production source, and date. Each title is grouped according to type under broad subject headings.

Other Channels for Information:

1. Some special lists prepared for elementary subjects.
2. Monthly school bulletin.
3. All curriculum guides list available audio-visual materials by title.

Example No. 2

SEATTLE, WASHINGTON:

The Seattle Public Schools' Audio-Visual Department issues an attractively printed, comprehensive catalog of audio-visual materials. The design of this catalog is as follows: (1) An introductory section deals with the delivery schedule, how to use the catalog, how to order, tips on projection of motion pictures and filmstrips, caring for materials, and the availability of special exhibits service from the Washington State Museum. (2) Next, there are separate sections for motion pictures, filmstrips, slides, miscellaneous, records, transcriptions, and tapes. Each of these sections has a tabbed divider and a graphic title sheet on the back of which appears pertinent material on methodology. Each title is adequately described and listed alphabetically in its own section. With the description appears vital data about producer, date, physical characteristics, grade level, and coded subject category. (3) At the end of each alphabetical descriptive section there is a complete topical index that includes classification of all titles under curriculum headings.

Other Channels for Information:

1. A mimeographed listing of titles for each elementary school grade, K–6, grouped under topics as found in the curriculum guides.

(These special lists were prepared with the help of a preparation committee of eight teachers.) These grade-level guides direct teachers to the main catalog for descriptions and details.

2. Monthly news bulletin entitled Audio-Visual Reporter.

3. *References to available audio-visual material made in published* curriculum guides.

Example No. 3

LOS ANGELES, CALIFORNIA:

The audio-visual aids section, Division of Instructional Services, of the Los Angeles Public Schools issues a number of main catalogs, each of which is a fine example of design and functional use. The extensive and comprehensive collection of materials is dichotomized as to organization and service along elementary and secondary lines. Therefore there is a main film catalog for elementary schools and another catalog for secondary schools. The 1955 issue of this catalog had 453 pages. Separate catalogs are also published for listing and describing materials other than motion pictures. There are in addition main catalogs dealing with Field Trip Surveys.

Other Channels for Information:

1. Catalogs of materials for each elementary school grade; these grade listings are complete with descriptions of the included titles. Brought together under the categories set up in the official curriculum guides are such instructional materials as motion pictures, transcriptions, filmstrips, picture wall charts, slides, art print portfolios, exhibits, sound filmstrips, and school journeys. A complete subject-title index appears at the end of the grade catalogs, and as in all main catalogs, the introductory material contains outstanding graphic content.

2. A bulletin entitled *Audio-Visual News* is published monthly in two editions, elementary and secondary.

Example No. 4

ST. LOUIS, MISSOURI:

The Audio-Visual Education Division of the St. Louis Public Schools issues its comprehensive catalog in two parts. Part I is the general, pictorially illustrated catalog of films, filmstrips, and slides. Part II, which is equally as attractive in format and illustration, lists and describes objects, study prints, pictorial booklets, and recordings. Each catalog has separate sections for each major kind or groupings of materials, and each catalog has its own alphabetical index of titles. Introductory material deals with historical perspective (so rich, of course, in St. Louis; see Chapter One), numbering system, how to use the catalog, audio-visual loan service, projectionists, and good projection techniques.

Other Channels for Information:

1. Locally owned and operated FM radio station program bulletins distributed annually on schedule.

2. Special comprehensive listings being produced for specific grade groups and subject areas. For example: *Audio-Visual Materials for Primary Grades, K–3rd;* and *Audio-Visual Guide for Secondary Schools, World History, American History, and American Problems.*

Example No. 5

SAN DIEGO, CALIFORNIA:

The Instructional Materials Center of the San Diego City Schools is forced by the very nature of its comprehensive services to issue several main catalogs as follows: Film Catalog, Filmstrip Catalog, Study Print Catalog, Catalog of Recordings, Catalog of Objects and Models; and in addition there are publications dealing with books for elementary and secondary schools. The catalogs are attractively designed and fully explanatory, and the motion picture and recording catalogs incorporate a number of striking photographs.

Other Channels for Information:

1. Curriculum guides list appropriate audio-visual materials.

2. A monthly bulletin entitled *Audio-Visual Showcase.*

In a closer look at the preceding examples of plans for publicizing materials, the following questions should be borne in mind: (1) Why do directors with large and comprehensive collections of material split up their catalogs? (2) In general, do the examples show that one basic catalog, or even a split-up catalog, does a sufficiently good job of informing teachers? (3) What valuable purposes are served by a general catalog? (4) How does a general catalog facilitate the preparation and use of specific information lists? (5) How can other individuals help to get the job of publicizing materials accomplished?

Large cities do not, however, have a monopoly on good list-type catalog procedures. Many medium and small cities prepare attractive and efficient catalogs according to the same general and specified procedures previously stated. Featured in the Springfield, Massachusetts, system are attractive mimeographed listings for various subject-matter fields for teachers in the secondary schools, and listings by grade levels for teachers in the elementary schools. In Richland, Washington, an attractively printed general catalog lists and describes the following centrally owned and distributed materials: filmstrips, motion pictures, slides, recordings, and models. The different kinds of material are grouped in separate sections, with a topical index and an alphabetically arranged title-and-description listing. In addition, special mimeographed lists are developed, showing specific relationship of materials to the curriculum. Still another brief example of catalog procedure ought to be mentioned, namely, that as developed in Pawtucket, Rhode Island. Here the catalog is attractively bound, illustrated by diagrams, and combines local listings with a few selected items from sources outside the school center. This catalog also combines publicity for materials with a handbook of procedure incorporating such topics as goals of service, values, policies, selection of materials, utilization, available equipment, and audio-visual services for the community.

Economy in the Catalog Process. Many directors are turning toward less expensive catalog printing processes. Instructional film producers are doing likewise. In one case the preparation of standard file cards with appropriate format is now being used in a streamlined catalog process involving offset printing. According to this process, a card for each item of material is prepared and filed away, ready to be taken out and arranged properly in page format, and photographed for making offset printing plates. The San Diego County Center, for example, is now preparing to use a special system utilizing addressograph plates of a size that will take a brief description in a suitable format. Other economies are made possible by specifying less expensive paper and by having printing done during slack work-periods at local print shops. Still other economies may be made by instructing local printers to save the type for existing descriptions if the job is being done by letterpress. Thus only type for description of new titles has to be set by machine. The director ought to stretch his dollars for publication by suggesting possible economies himself before someone orders him to do it, or before someone cuts his budget.

Descriptions of Content. Preparing descriptions of material for audio-visual publications and catalogs is critical and time consuming. Ways must be found to do this job well, however, because of its importance to teachers. While full-page analyses of content are easier to write, there isn't an audio-visual budget anywhere that can stand the printing expense to carry out such a plan, and catalogs would be so large anyway that teachers probably wouldn't even open them up. The following directions are given as to procedure:

1. Make the synopsis brief, but give teachers clues as to content coverage and usefulness. For example, be sure to mention if actors are children, adults, or high school students; this is a valuable clue to possible identification of learners with the film action.
2. Include vital data about physical characteristics: running time, number of frames, number of slides or pictures in the set, color or black and white, etc.
3. Include specific grade-level placement.
4. Include producer and production date.
5. Make use of sourcebooks, evaluations, and producers' descriptions.
6. Get other people to help.
7. And finally, if the job of writing or obtaining descriptions is impossible, make sure that the selection committee includes an error-free judgment as to subject, unit, and grade-level placement. After all, the description doesn't make the film better, but it does help a teacher predict that a film or other item will help achieve an objective.

Making the Catalog Process Easy. The director will, of necessity, soon realize that the job of cataloging can be divided so that he himself needs to be burdened only with those tasks that require his training and experience. Many aspects, while nonetheless important, are clerical in nature and should be so organized. The basic essentials of a good catalog process are as follows:

1. Organize and maintain an alphabetical card file of every item

purchased. Enter on each card the proper classification headings or the code that determines the title's appropriate subject relationships for future lists and catalogs.

2. When new titles are announced in a monthly bulletin or list, prepare descriptions and data to accompany them in a standard format, making them immediately available, without further writing or analysis, for subsequent inclusion in a main catalog.

3. Maintain office revision copies of all lists daily. Each new entry in the card file should be made appropriately in the revision copy of the catalog.

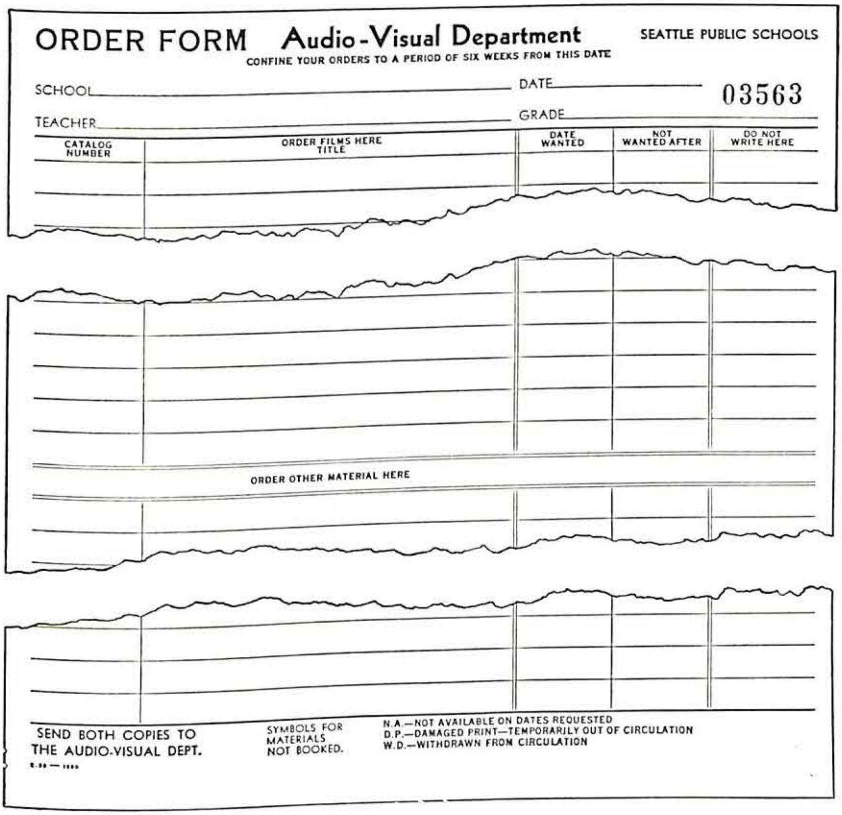
4. Devise plans for evaluation and selection that are consistent with the data needed for cataloging processes.

THE ORDERING, SCHEDULING, DISTRIBUTING SYSTEM

As has been stated before, the audio-visual service program should be so organized that a variety of materials are made available to teachers when they are needed for maximum contribution to teaching objectives. Going along with this are two other important principles, as follows: (1) Convenience in availability of materials and equipment increases teacher demands for materials and facilitates effective use. (2) The audio-visual service program should be locally centralized for unity of purpose, planning, promotion of use, and economy. The application of these principles to a school-system audio-visual service program demands that an efficient system of ordering, scheduling, and distributing materials be set up to facilitate properly their use in the classroom. Full attention is therefore given in this section to an efficient process for accomplishing the facilitation objective under the following headings: (1) order forms and ordering procedures; (2) scheduling methods, forms, and control processes, and (3) delivery and pickup of materials. Each of these is now discussed in terms of the office procedure as observed by the author in the Audio-Visual Department of the Seattle Public Schools, and in terms of other possibilities as well.

Order Forms and Ordering Procedures. The Seattle order form is a simple, 8½ inch by 11 inch, triple-copy, snap-out-type form printed on order by a local business concern, calling for the teacher to fill out the top form only with his name, school, date and grade, then to add the catalog numbers and titles of materials desired, date wanted, and also to add a future deadline date in a "Not Wanted After" column. The form also specifies that film titles are to be entered at the top of the page and all other items in the remaining section clearly marked. The teacher then removes the last of the three sheets from the snap-out form and *sends the remaining copies to the school coordinator* who screens the order and sends it on to the central audio-visual department for processing. (See Fig. 5–3.) The teacher is reminded on the form that *no order is to be requested for a date beyond*

Fg. 5–3. This is Seattle's snap-out-type order form for teachers. After making out the order, the teacher tears off and retains the third copy. ***(Courtesy Standard Register Company of Seattle and the Seattle Public Schools.)***



ORDER FORM Audio-Visual Department SEATTLE PUBLIC SCHOOLS

CONFINE YOUR ORDERS TO A PERIOD OF SIX WEEKS FROM THIS DATE

SCHOOL DATE 03563

TEACHER GRADE

CATALOG NUMBER	ORDER FILMS HERE TITLE	DATE WANTED	NOT WANTED AFTER	DO NOT WRITE HERE

ORDER OTHER MATERIAL HERE

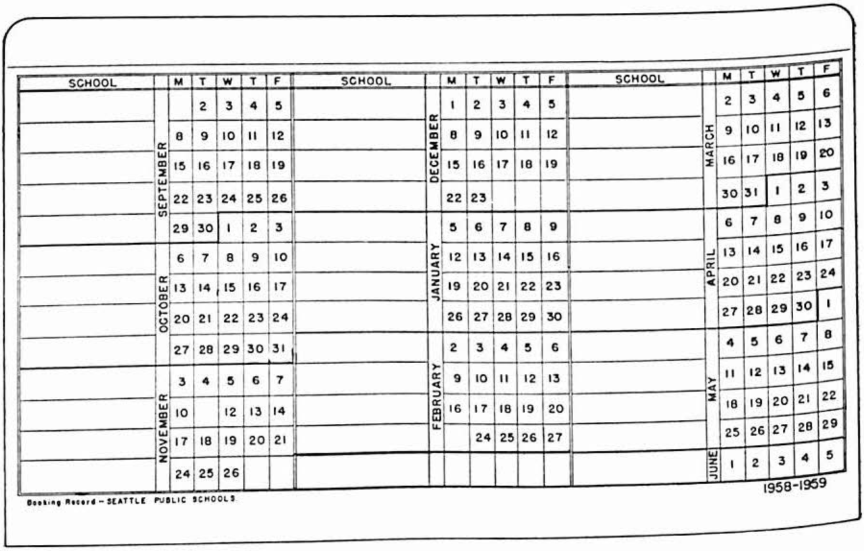
SEND BOTH COPIES TO THE AUDIO-VISUAL DEPT.

SYMBOLS FOR MATERIALS NOT BOOKED.

N.A.—NOT AVAILABLE ON DATES REQUESTED
D.P.—DAMAGED PRINT—TEMPORARILY OUT OF CIRCULATION
W.D.—WITHDRAWN FROM CIRCULATION

six weeks of the date the order is sent in, and of course the teacher is aware of the delivery and pickup days at his school, *allowing use of the material for the school week if necessary*. However, *orders may be phoned in* if they are of an emergency nature. When received at the Seattle audio-visual department office, the orders are time-stamped and usually processed the same day. How this particular form is processed by clerical workers is told in the scheduling section, but first some other possibilities need to be mentioned. Necessarily, order forms and methods have to be designed or selected in terms of unique local conditions and established plans of action. Because of differences in delivery systems, for example, it may be necessary to require different order forms for high schools, junior high, and elementary schools. Some directors actually have a different order form for each type of material distributed. Wherever machine scheduling of motion pictures is practiced, a two-form system is mandatory, since special order cards for machine processing are a necessity. This presupposes, of course, that other materials in addition to motion pictures are dis-

Fig. 5–4. Seattle's scheduling card provides a record of the reservations for two years, the other side being the same except arranged according to dates for the next school year. *(Courtesy of the Seattle Public Schools.)*



SCHOOL		M	T	W	T	F	SCHOOL		M	T	W	T	F	SCHOOL		M	T	W	T	F
	SEPTEMBER		2	3	4	5		DECEMBER	1	2	3	4	5		MARCH	2	3	4	5	6
		8	9	10	11	12			8	9	10	11	12			9	10	11	12	13
		15	16	17	18	19			15	16	17	18	19			16	17	18	19	20
		22	23	24	25	26			22	23						30	31	1	2	3
		29	30	1	2	3		JANUARY	5	6	7	8	9		APRIL	6	7	8	9	10
	OCTOBER	6	7	8	9	10			12	13	14	15	16			13	14	15	16	17
		13	14	15	16	17			19	20	21	22	23			20	21	22	23	24
		20	21	22	23	24			26	27	28	29	30			27	28	29	30	1
		27	28	29	30	31		FEBRUARY	2	3	4	5	6		MAY	4	5	6	7	8
	NOVEMBER	3	4	5	6	7			9	10	11	12	13			11	12	13	14	15
		10		12	13	14			16	17	18	19	20			18	19	20	21	22
		17	18	19	20	21				24	25	26	27			25	26	27	28	29
		24	25	26											JUNE	1	2	3	4	5

Booking Record—SEATTLE PUBLIC SCHOOLS

1958-1959

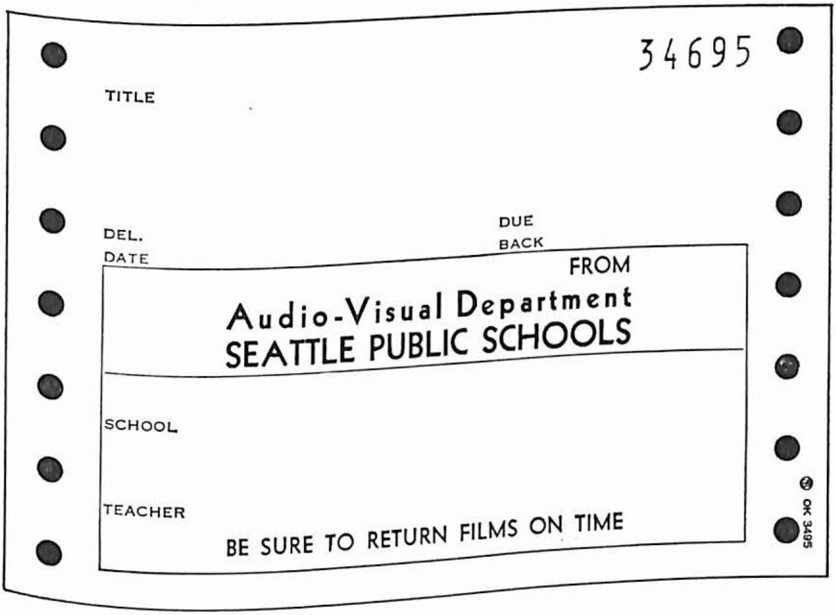
tributed. In a spirit of genuine service, order forms need to be simple, brief, roomy, time conserving, and should provide an immediate carbon copy as a record for the teacher.

Scheduling Methods, Forms, and Control Processes. Now let us resume the story of the triple-copy, snap-out-type order form used by the Seattle Audio-Visual Department. Starting with the receipt of an order form in duplicate (the third copy having been kept by the teacher for reference), the steps in processing by clerical workers are as follows:

1. The receipt time is stamped on the order for priority in case of duplicate requests.

2. The title for each item ordered is located on the alphabetically arranged, magnetically separated, schedule-control card, the reservation period is marked in the appropriate spaces, if free spaces are available for the dates specified, and the names of teacher and school are added. The Seattle schedule-control card, measuring 5 inches by

Fig. 5–5. This is Seattle's Kant-Slip, triple-copy, marginally punched, combination packaging-confirmation form. ***(Courtesy of the Seattle Public Schools.)***



34695

TITLE

DEL.
DATE

DUE
BACK

FROM

Audio-Visual Department
SEATTLE PUBLIC SCHOOLS

SCHOOL

TEACHER

BE SURE TO RETURN FILMS ON TIME

OK 3495

8 inches, is of the magnetic-separator type. (See Fig. 5–4.) That is, two thin strips of magnetic material are inserted in the paper in such a way that the cards repel each other at the top. The titles, having been typed at the top of each card, can thus be seen several at a time. This separation speeds up the process of selecting the specific card desired. The card itself is a two-year schedule card with weekly reservation spaces for all months of the school year, September to June, on each side. All cards are located in a convenient, deep-well desk. (Such desks may be purchased or fabricated locally. See Fig. 5–7.)

3. When the item of material requested has been successfully reserved, the scheduled delivery date is entered in the appropriate column on the order form. Unavailable materials are so indicated on the order form, or open dates close enough to the date requested are added. The top sheet of the order form now goes to a typist, and the remaining carbon of the processed order is filed after being analyzed for purposes of accumulating data.

4. The packaging label, confirmation slip, and order-filling slip are now made up from processed order sheets by a typist who uses Seattle's triple-copy, Kant-Slip, continuous, marginally punched forms. (See Figs. 5–5 and 5–6.) For each item scheduled, one of the Kant-Slip forms is typed up on a typewriter with a registrator platen. The top part of the form, carrying delivery date, due-back date, title of material, name of teacher, and school, is the gummed label that is filed with the office copy in the "call file" under the packaging-for-delivery date; the third copy goes out at once to the teacher as a confirmation of the materials he or she is to receive. Each unit of the continuous Kant-Slip form measures 3½ inches by 5 inches.

5. According to work routines each day, the delivery forms for every item scheduled are pulled from the "call files," and the materials are then packaged and made ready for delivery. The office copy of each slip is filed under due-back dates in files for that purpose. Thus when the materials are returned from the borrowers, the slip is checked off. If materials are not returned on the scheduled due date, the corresponding slips that have been pulled from the file are not checked off, and hence the failure is shown up immediately.

The next phase of the operation is delivery of materials to the schools on scheduled dates and their subsequent return to the pro-

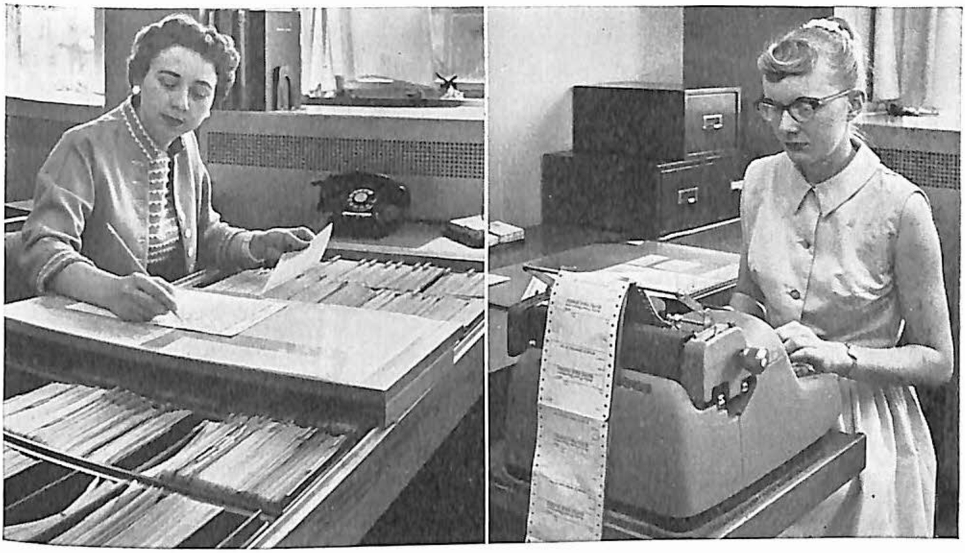


Fig. 5–6.* Reserving, scheduling, confirming, and order-filling procedures must be planned to save staff time and facilitate service. *(Courtesy Pacific Division of the Standard Register Co., and the Seattle Public Schools.)

cessing headquarters. But before proceeding to this operation, some other possibilities for scheduling should be explored. The Seattle system reveals quickly all the essential elements, namely:

1. Making the reservation
2. Confirming the order and showing the intent to deliver and pick up on scheduled dates
3. Filing the packaging slips according to the future "call" dates
4. Maintaining a positive check-off control system for the control of each item out on loan

A wide variety of processes and equipment may be used in developing a particular system. (See Fig. 5–7.) Some of the scheduling or reservation-holding card devices are automatically operated; in some other systems rotary files are used, and in others variations of the Kardex or visible-file methods are employed. In a few audio-visual service programs, machine scheduling of motion pictures has been set up. (See Fig. 5–8.) In the Los Angeles audio-visual department, for example, by the introduction of automatic-scheduling machines for motion pictures, it was possible to save the services of six full-

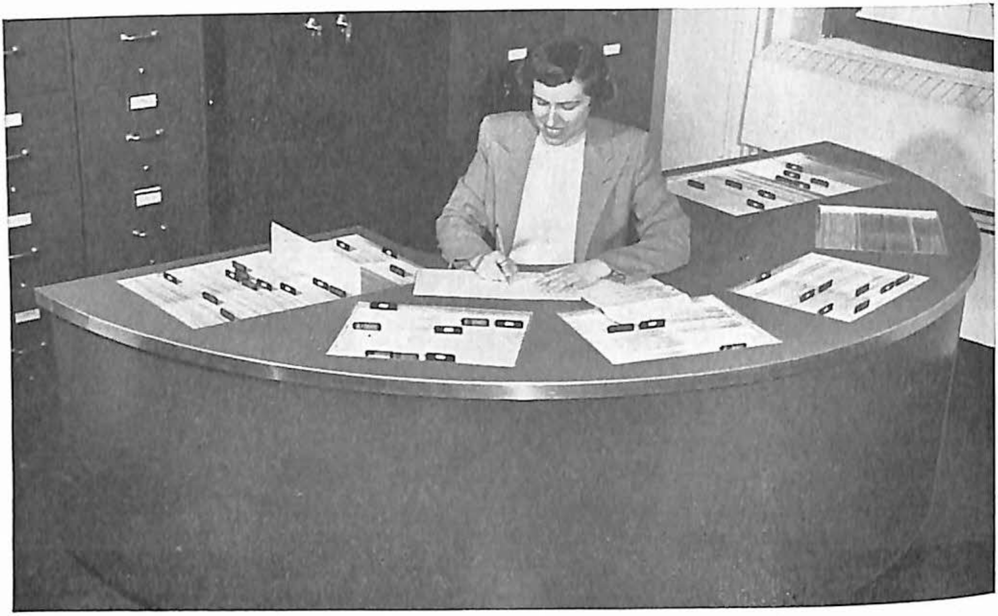


Fig. 5–7.* This deep-well-type scheduling desk is in use at the University of Connecticut Audio-Visual Center. A four-year scheduling card was devised before the desk was designed and built locally. *(Courtesy Audio-Visual Center, The University of Connecticut.)

time scheduling workers. According to this system, a full battery of machines has been installed and all orders for films are called in once each month from the high schools and more frequently, but nonetheless regularly, from the four hundred elementary schools. A thousand films a day are thus scheduled by machine. In Springfield, Massachusetts, the audio-visual service center handles its motion picture scheduling by machine methods also. Appropriate order cards are called in four times each school year, and the collected cards, some 2,000 or more in number, are processed by buying the automatic-scheduling service from the local Service Bureau Corporation. That is, the cards are sent to an outside agency for processing.

As is often the case now, city government agencies rent and operate automatic machines for business operations. In these cases it may be possible for the school system film-scheduling processes to be included as a part of city-wide automatic machine services. Whether the machines themselves or the machine service are rented, expert

Fig. 5–8. **Scheduling motion pictures by automatic machine.** *(Courtesy Bureau of Audio-Visual Education, California State Department of Education, Sacramento.)*

advice and counsel in setting up the process in terms of local needs is available from the International Business Machines Corporation (IBM). In fact, for whatever system, machine or manual, that seems best for a community, the prospective director should know that salesmen and other specialists are available who will help devise specialized forms for the ordering, scheduling, and delivery process. Before making a final decision, the director needs to size up his present or proposed system of processing in terms of volume to be handled, available staff, variety of materials that teachers can order, materials that do not have to be scheduled for one reason or another, delivery and pickup arrangements, the service procedures in each school plant, and the ease with which the system can be operated. But now another important aspect of the problem, namely, delivery and pickup of materials, needs to be considered.

Delivery and Pickup of Materials. The delivery and pickup method is an important link in the chain of services to teachers. Delays in scheduled deliveries cause serious teaching problems and destroy rapport between teachers and the service centers of the schools. Large audio-visual service centers find it more convenient and desirable to own their walk-in-type trucks, with full-time deliverymen being added to their permanent staffs. However, small service centers rarely can afford this plan of operation. In the case of Seattle, it was pointed out that scheduled deliveries were made once each week to the elementary schools and twice weekly to the high schools. Because of the many ways in which the delivery and pickup problem has been met, and the many unique local conditions that can exist, a list of possible methods follows for the prospective director to consider. They are:

1. Use audio-visual department owned or assigned and controlled trucks.
2. Make use of regular school-system supplies truck.
3. Make use of Plant Supervisor's trucking system.
4. Employ local package delivery company on an individual package or daily service contract basis.
5. Send materials to schools via local U.S. Post Office. A post office package pickup station outside the school will facilitate this. The school audio-visual coordinator can note required or original package postage and affix the same amount of stamps for the return, thus eliminating a trip to the post office. Local post office parcel delivery is regular, but as everyone knows, parcel pickup is not. Only as return packages are ready when incoming packages are delivered can they be picked up at closely predictable times.
6. Use personally owned automobiles of director, or school-building coordinators on a mileage-paid basis. This is found to be expensive if the director is the deliveryman, although this is a very common method. Sometimes school-building coordinators return the materials that are delivered by the director.
7. Use older high school students and one or more audio-visual department-owned motor scooters. Full insurance will have to be maintained, the working hours will have to be after school and on Saturdays, and all legal requirements must be met adequately.
8. Employ students to serve as messengers where schools are

within fairly close walking distance. Employment must be legal on a part-time basis. Directors should be aware of danger of using students who are not in a fully insured, employed status. In case of accidental injury, suit for damages may be brought against the schools.

9. Use parents who consent to donate services and their cars on a rotation basis to deliver and return materials to certain schools. This could be a PTA help-the-schools project.

10. Teachers, principals, and custodians can call for and return materials.

So far in this chapter it has been emphasized that teachers need to be adequately informed about available materials, and that it is best to develop a system involving general and specific methods for accomplishing this goal. Also it has been shown that publicizing materials is not enough to assure their application, but that to facilitate their use, a system needs to be set up involving ordering, scheduling, and distributing them. There is much more, however, to facilitating use of materials than this. The prospective director must see to it that a service system is established in each of the school units, since these are parts of his over-all service organization. In addition he must be able to recommend to authorities, offer counsel, and seek to provide an adequate environment for proper and efficient use of these materials in classrooms and in other spaces where learning activities are to be conducted. The analysis of the first of these major additional aspects of facilitation is discussed in the next section.

THE SERVICE SYSTEM IN EACH SCHOOL BUILDING

The question often asked by beginning workers in this field is: How can I promote the use of audio-visual materials in my school? This question triggers a flood of answers, but foremost among them should be the advice to establish a service system for teachers. Teachers need help, and sometimes they don't quite see their professional areas of need, but they certainly recognize, and quickly, their need for help with the physical handling of equipment, materials, and room facilities. Since the turn of the twentieth century, guiding principles have been developing, somewhat tortuously of course, regarding the use of materials and the development of programs of service. The principles of *centralization of local services* and of *timely, convenient* *supply of materials and equipment* have already been stated, and a part of their influence has been revealed in prescribed action. These principles will also guide the development of a service system within each school unit; however, an additional principle that has emerged in the last two decades is *that the classroom itself is the ideal place for audio-visual materials to be put to work*. Universal implementation of this principle is by no means complete, and more will be said about this in the next main section dealing with the provision of an adequate classroom environment. For the present the principle must be recognized because of its implications for service to teachers and how that service will be carried out. Therefore its application is assumed in the following recommendations for action. Each of the important elements in a desirable service system is now analyzed in terms of the help that should be given.

Teachers Need Help. Just what in-school services do teachers need in using audio-visual materials effectively in their classrooms? While teachers may not generally and readily admit that they need help in developing certain professional skills, they will admit right off to the need for help in:

1. Locating and scheduling needed materials from outside-school-system sources.
2. Obtaining supplies and equipment for production of materials.
3. Delivery of equipment to the classroom and its return on schedule.
4. Providing trained equipment operators whenever needed.
5. Transmitting orders to local distribution headquarters.
6. Finding what the trouble is when physical difficulties with materials and equipment arise.
7. Avoiding conflicts with plans of other teachers for material and equipment.
8. Obtaining up-to-date information about materials.
9. Learning to operate equipment.
10. Taking pictures, mounting pictures, arranging bulletin boards, and making exhibits and other audio-visual materials.
11. Planning special audio-visual presentations in other school areas like the auditorium, gymnasium, and school corridors.
12. Arranging for pre-use examination of materials.

Giving such help is no easy matter, and if a school principal and the audio-visual service director turn their backs upon these needs, their best efforts to have an impact on the learner through audio-visual experiences fail. Therefore the director and principal must cooperatively establish a system of teacher services in each school building. In both elementary and high schools alike, the efficiency of this service program depends upon a key person, an audio-visual leader working at the school-building director level. While this person has been given many titles, the one that is most common presently is the "*Audio-Visual Building Coordinator.*" The relationship of this school leader to the over-all audio-visual services program will be discussed in the next chapter; however, at this point it must be recognized that the help that teachers need cannot be given by the principal on an unorganized, unsystematized basis, and therefore the first step is to select a qualified individual to work with the director in setting up the service system. We shall now discuss each of the essential operating facilities and conditions under which this leader can supply the necssary services.

Assignment of Equipment Units to Each Building. The bulk of the equipment needed for classroom use in any school building should be assigned permanently to the building. It has come to be axiomatic that centralization of materials is economical and feasible, but that the centralization of *equipment* is unwise and impractical because trucking equipment to the schools subjects it to merciless pounding. Another reason, and more important, is that equipment units need to be on the spot for training students and teachers to operate them. While decentralization of equipment in every school unit is a clear-cut goal, it may be necessary to establish a central pool of certain kinds of special-purpose equipment that may not be needed continuously and which, if distributed on a loan basis as needed, would permit a more rapid build-up of the inventory of more commonly used equipment such as motion picture projectors.

In a well-developed audio-visual service program, one or more of the following equipment units are likely to be found in every elementary and high school building in the school system: (1) sound motion picture projector (a lightweight model for classroom use with a booster amplifier and extra speaker for the auditorium, or an additional heavy-weight projector for the auditorium); (2) filmstrip projector; (3) standard overhead slide projector; (4) opaque projector; (5) record player; (6) classroom-type tape recorder; (7) Vu-graph transparency projector; (8) still picture, 35-mm. camera; (9) Polaroid Land Camera for using the direct transparency procedure; (10) television receiver, and (11) radio receiver. In addition to the equipment units of the types just mentioned, an ample supply of screens, and a supply of mobile, four-caster, 42-inch projection stands, one for each piece of heavy audio-visual equipment, ought to be made available to the school. If desks in the classroom are of the movable, flat, table type, the number of projection stands required can be reduced. Since other types of equipment are also necessary for the program of the school, the following equipment units may be made available on a loan basis, according to need from the central headquarters: (1) magnetic sound, motion picture projector; (2) flash-meter for overhead projector; (3) motion picture camera and lighting equipment; (4) high-fidelity record-playing components; and (5) high-fidelity, broadcast quality, tape recorder for special, magnetic recording purposes. The equipment units needed in each school will naturally be determined by the main kinds of materials distributed from the locally centralized service center, and the number of each kind of equipment needed will depend upon valid instructional demands. It is understandable that the number of equipment units actually on hand is a function of the degree of financial support, and this is a matter for later analysis in Chapter Seven. For present insights it will be sufficient to re-emphasize the principle that decentralization of equipment facilitates the use of materials. But in any significant effort to provide the help that teachers need, the audio-visual coordinator ought to arrange for a projection service, and this can be feasibly accomplished by organizing a student projectionist crew.

The Projectionist Crew. The director must be prepared to advise and teach each audio-visual school-building coordinator how to organize and maintain student operator crews. Selected fifth-graders and above, either girls or boys, may under favorable conditions be motivated to donate time and energy without detriment to academic standing or health. This essential aspect of the service system poses the following problems: (1) selection of crew members, (2) training the crew, (3) organization for efficient service, and (4) developing

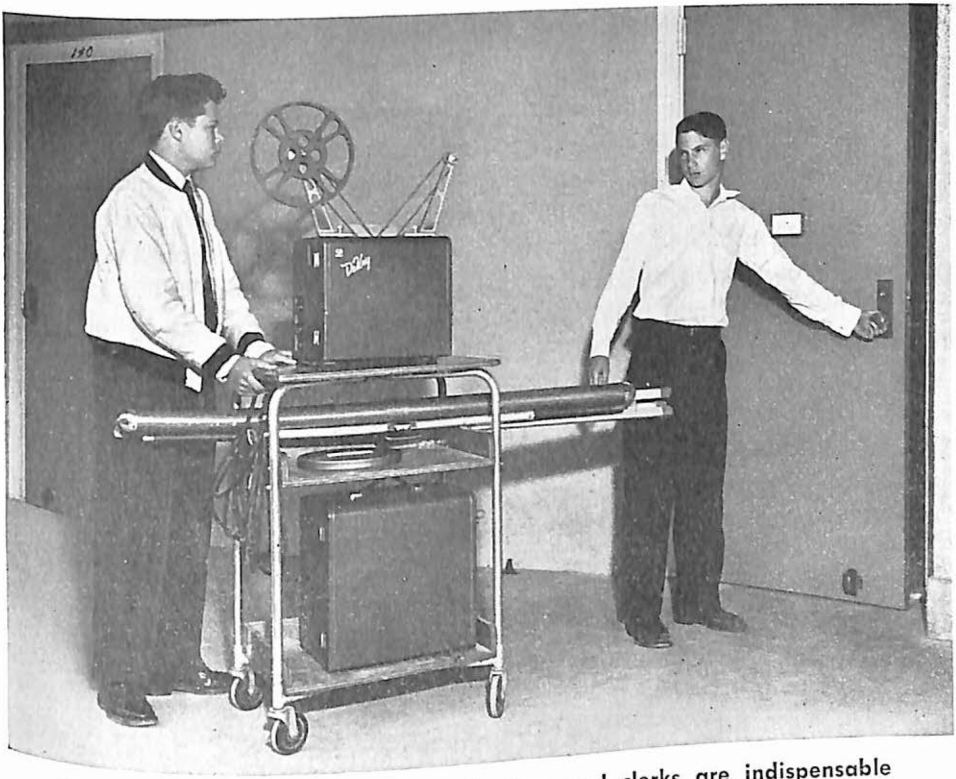


Fig. 5–9. Student operators, crew leaders, and clerks are indispensable agents of the A-V building coordinator. *(Courtesy Los Angeles City Schools.)*

morale. All these, of course, are interrelated, but each needs a separate discussion.

When selecting members for the crew the coordinator needs to formulate a unique local policy, but he ought to bear in mind the following suggestions:

1. There is a need for balance between members at various grade levels to facilitate progress in capability from year to year. This policy provides a number of top-ranking, capable students for the most difficult jobs, such as training and supervising other workers, and inspecting equipment. For example, strike a balance between number of fifth- and sixth-graders in elementary school; between seventh, eighth, and ninth-grade pupils in junior high school; and between tenth-, eleventh-, and twelfth-graders in senior high school.

2. Superior students are needed for crew members, but above all, students should be capable of excellent workmanship or they should never be accepted, or if they cannot succeed, they should be eliminated. But sometimes membership in the crew will be good for a student who is maladjusted, and here a real problem exists in balancing the good of the service against what might be good for one or more individuals. Thus, in the selection of crew members, the coordinator should incorporate the advice of his colleagues through the offices of the principal and guidance counselors.

3. Crew members may help in recruitment, although in this case a scale for judgment should be formulated for all who make recommendations; that is, a brief workable scale involving such items as appearance and poise (or capability to develop it), health, character, academic capability and study habits, and interest in projection equipment.

4. Final acceptance of new members should be made only after a specified provisional status period which ends as soon as an elementary though important examination has been passed satisfactorily.

Training the crew demands an organized teaching program with study materials and laboratory practice sessions. The coordinator should bear the following points of advice in mind as he builds a training course for his own situation:

1. *An equipment handbook for each student is an essential.* Directors of audio-visual service programs ought to prepare suitable handbooks as a direct form of assistance to each coordinator. Such a handbook should contain threading diagrams and explanations of how equipment should be set up and handled. An interesting example is the mimeographed *Manual for Student Projectionists,* prepared by the Division of Instructional Materials of the San Jose Unified School District of California. In the front of this manual there appears a "Foreword" by the Assistant Superintendent of Schools. Similar manuals including appropriate additional materials have also been prepared for teachers and for elementary and secondary school coordinators by the San Jose department. Los Angeles provides another example. The audio-visual department there has prepared an attractively printed and illustrated manual for school

coordinators that contains excellent materials for a training program. Many other schools as well are known to follow this practice. In this connection a comprehensive equipment manual[2] is available, and for many years Mannino's manual[3] has been used as a source of content for projectionist training programs.

2. *Scheduled training-practice sessions are essential.* The best training programs are organized on the basis of sessions complete with instruction sheets and practice in an equipment laboratory. Such instruction should be carried on in groups for specific topics and machines and should involve only those who have not passed the

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[2] James D. Finn, *Audio-Visual Equipment Manual,* Dryden Press, New York, 1957.

[3] Phillip Mannino, *ABC's of Visual Aids and Projectionist's Manual,* rev. ed., M.O. Publishers, Box 406, State College, Penna., 1955.

Fig. 5–10. Student crews need to be organized, trained, and supervised. (Courtesy Division of Audio-Visual Education, St. Louis Public Schools.)

required-operational tests. This procedure demands a record system that shows on a card, to be carried by the student, the extent of the trainee's qualifications. For example, at the West Hartford, Connecticut, Talcott Junior High School, the operator's qualification card bears the signature of the A-V coordinator and of the school principal, and all major pieces of equipment are checked off on the card as performance tests are passed.

3. *Personnel for carrying on training are esential.* The coordinator may not be able to find the time to accomplish the required training on a personal instruction basis. He should take necessary steps to obtain assistance from colleagues through the principal's office, or he should organize a teaching crew among his best student operators, thus putting the training program on an apprentice basis, or he should turn the training and handling of the crew over to an assistant.

Developing a good audio-visual equipment operator is not an easy task, but a comprehensive listing of desirable characteristics may be of assistance in the organization of content for bulletins and instruction sheets pertaining to training. Harcleroad and Allen[4] have listed the following characteristics:

WORK HABITS

The superior A-V operator is one who:

1. Works pleasantly, willingly, and efficiently with other people.
2. Is thoughtful of the rights of others.
3. Keeps his mind on his job and anticipates actions that he should take.
4. Listens carefully while being given instructions.
5. Performs his duties quietly and effectively without disturbing students or teachers.
6. Does his job quickly, yet with precision and efficiency.
7. Does not let others distract him from his work.
8. Meets emergencies with calmness but also with efficient action.
9. Asks necessary questions to avoid mistakes.
10. Reports for duty promptly.
11. Responds immediately and courteously when spoken to.
12. Performs work that should be done without being asked or reminded.

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[4] By permission. From Fred Harcleroad and William Allen, *Audio-Visual Administration*, Wm. C. Brown Co., Dubuque, Iowa, 1951, pp. 67–68.

13. Never does a "half-way" job in carrying out a task.

14. Takes correction like a gentleman and never allows same mistake to occur again.

15. Welcomes suggestions or special instructions of classroom teacher and carries them out pleasantly and completely.

16. Remembers that there is a tremendous amount of personal satisfaction in doing a job well.

17. Assumes willingly his share of routine errands.

18. Checks assignment and bulletin board each day immediately upon reporting and consults with coordinator concerning his assignment.

19. Indulges in no horseplay or other careless actions that might endanger equipment or his good standing.

20. Assists, without being told, in keeping audio-visual office clean and shipshape in every way.

21. Occupies spare time profitably.

CARE OF AND RESPECT FOR EQUIPMENT

The superior A-V operator is one who:

1. Handles all equipment with utmost care and precaution, realizing that it is expensive and valuable.

2. Operates equipment *only* when authorized to do so.

3. Always returns equipment to proper location and in good order.

4. Never leaves equipment unless relieved by another student operator or unless teacher guarantees supervision of equipment until next operator arrives.

5. Operates equipment *exactly* as instructed.

6. Never meddles or tampers with equipment or "experiments" with various controls and adjustments.

7. *Never attempts to make any repairs.* (Repairs are to be made only by the highly trained equipment technician employed by the school system.)

8. Takes every precaution to prevent damage to equipment:
    a. Places equipment only on firm, stable surface—table, desk, or special carrier.
    b. Stays close by equipment when it is under his care and especially when it is in operation.
    c. Does not allow other students to operate or tamper with equipment.
    d. Lays and secures all cables and extension cords so that people will not trip over them and thus break cables, break connections, or pull equipment from its resting place.
    e. Does not place equipment where students will bump into it

  or stumble over it, or where doors, desks, or chairs might be pushed against it.
  f. *Stops* equipment in operation immediately when trouble occurs or is suspected.

9. Installs new projection lamps only with permission and supervision of A-V coordinator.

10. Remembers that equipment knocked out of action through carelessness or inefficient operation:
  a. Costs money to repair.
  b. Deprives students of instruction that their teachers have planned on for days in advance.
  c. Reduces the general efficiency of the audio-visual education program.

Organization of the operator crew for efficent service is another matter of great importance, and the following suggestions ought to be considered:

1. *Leadership Force.* Since coordinators are usually teachers, part-time or full-time, a corps of student leaders ought to be established. The service of the operator crew, for example, could function with the help of a top-ranking, capable crew member as a captain, together with one or more assistants who could take over during scheduled periods of the school day or when the captain was absent from school. This leader would have specific duties of a supervisory nature, checking on attendance, orders, routing etc. A definite leadership structure is important.

2. *Teams or Squads.* The organization of crew members into teams or squads for coverage of floors, or for morning or afternoon sessions, or for certain days of the week, depending on volume of service and size of the school, may prove to be helpful. Each team or squad would, of course, then have a leader who could report to the coordinator or to the crew captain.

3. *Office Force.* Any operator crew should be supported by an office clerical crew; these may never go out on classroom assignments, but may process orders, check schedules, prepare materials and route slips, and get equipment ready. Office forces are easier to organize at the high school level, but modifications of such procedure in elementary schools is not impossible. In the case of high schools, students may conveniently report to the audio-visual headquarters during

study periods or under other arrangements. In elementary schools care must be taken to locate the coordinator's classroom near the headquarters to facilitate office-force work before and immediately after school. The system for accepting and processing orders may thus have to be restricted to specified periods in advance of the date that material and equipment are needed. Greater emphasis may also have to be placed upon teacher operation of equipment and the training of operators within each class, fourth grade and above, in order to cut down the frequency of separating the same student from his class for a projection assignment elsewhere.

A final and highly important factor in developing and maintaining the efficient service of a crew of projectionists is morale. Morale develops as a result of favorable conditions, and while not all these conditions can be discussed here, the following significant elements should receive close scrutiny:

1. *Operating according to a well-known, clearly defined set of procedures and commitments develops morale.* In the Los Angeles *Audio-Visual Handbook for Secondary Schools*, mentioned previously, the Bancroft Junior High School makes use of a crew-member pledge, which all candidates as well as their parents must sign before being accepted. While the thirteen rules in the pledge need not be repeated here, in view of the Harcleroad and Allen listing just quoted, it will be helpful for the director to note the introduction and conclusion of the pledge as follows:

AUDIO-VISUAL STAFF RULES AND REGULATIONS[5]

In accepting membership on the Bancroft Junior High School Audio-Visual Staff, I hereby agree to carry out the following rules to the best of my ability. . . . I realize that as a member of the Bancroft Junior High School Audio-Visual Staff, I am holding a responsible position, and that I am receiving experience which will be of great value to me in later life. I furthermore understand that the foregoing rules are drawn up in order to help me work more efficiently and to maintain the splendid reputation of previous Bancroft technicians. I also am conscious of the fact that I may be removed from the staff, regardless of length of service for violation of the above rules.

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[5] *Audio-Visual Handbook for Secondary Schools*, Division of Instructional Services, Audio-Visual Section, Los Angeles City School District, Los Angeles, California, 1956.

____________________ Student
____________________ Parent

2. *Check-up and accurate recognition of quality workmanship is important for morale.* Coordinators must know what is going on and what is being done by each worker. Unless work is being checked, a sense of disregard for good workmanship is likely to ensue. Morale is influenced by knowledge that what is done will be checked.

3. *Belief by crew members that the work done is important, develops morale.* This belief can be most effectively instilled by expressions of appreciation by other than the immediate leader. School principals, teachers, and top-level school authorities can speak the right words. The impressive Foreword in the San Jose school system *Manual for Projectionists,*[6] previously referred to, was signed by the assistant superintendent of schools. It is a strong case in point and is quoted in full:

> You are a member of a select group that gives much service to your school.
>
> The morale of your group and the services performed have always been very high. You should always strive to fulfill your obligations, and to maintain the highest standards of performance. Your first consideration must be satisfactory service rendered.
>
> A projectionist must become familiar with each piece of equipment, and well trained in its use. Following is a manual that will give many useful and practical hints to help you do a better job of showing audio-visual materials.
>
> [S/] CURTIS DAVIS
> Assistant Superintendent of Schools

4. *Club or organization procedure and appropriate insignia develop morale.* Making a club out of the crew, with elected leaders chosen by carefully taught criteria for judgment, together with appropriate membership cards and badges is a good pathway to morale. School coordinators may set up a strict procedure for application for a

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[6] *Manual for Projectionists,* Division of Instructional Materials, San Jose Unified Schools, San Jose, California, 1955.

membership card of their own design or they may become affiliated with the Projection Club of America,[7] using standard cards, gold pins for dress, and badges for school attire. As was pointed out earlier, projectionist cards should show special qualifications as a matter of record. The standard student projectionist card as used by the Los Angeles Audio-Visual Aids Section[8] is as follows:

AUDIO-VISUAL AIDS SECTION

No.________________ Date________________________

The undersigned has completed a course of instruction in the operation of the 16mm. motion picture projector or projectors named below.

Authorization is hereby given to operate the projector when all rules and regulations of the Board of Education, and all laws of the city, county, and state governing motion picture projection, are fully met.

This card shall be revoked upon evidence of incompetence or for violation of city, county, or state requirements.

Make________________ Name________________________

____________________ School________________________

Model________________ Instructor________________________

____________________ Approved________________________

As a club, the operator crew frequently engages in interesting club activities such as a trip to nearby University audio-visual centers, to theatrical projection rooms, and to audio-visual production centers, thus adding variety to the agenda of ceaseless training activity that must characterize most of the club sessions. The director at West Hartford, Connecticut, organizes such a trip for some eighty junior high school operators each year. Expenses for the all-day trip, including two chartered buses, are paid out of funds budgeted for the purpose.

5. *School awards and formal personal recognition develop*

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[7] See Phillip Mannino, op. cit.

[8] *Audio-Visual Handbook for Secondary Schools, op. cit.*, p. 27.

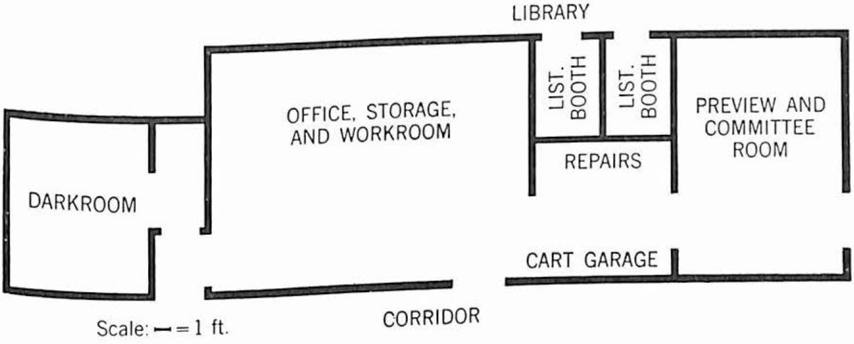
morale. Such awards go beyond school newspaper accounts and over-all recognition by school authorities in publications. At appropriate times, a book award, or other prize could be offered in school assemblies to the most outstanding operator of the year. Other awards, such as certificates of service and letters by school officials stating the period of service and the over-all rating assigned by the coordinator, should go to all participating students annually. Plaques with engraved names of leaders, or with names of crew members who serve a specified number of years, have been effective also in this regard. A tribute could also be given the school's crew by arranging in the corridor a special exhibit of pictures of members using or delivering equipment. Such matters as these need, of course, to be discussed with coordinators in their meetings with the director of audio-visual services for the school system.

Assigning Collections of Materials to Each School. In recent years there has been an increasing tendency in well-developed audio-visual service programs to build up collections of filmstrips, study print sets, maps and globes, recordings, and magnetic tapes in each school building. This decentralization of the less expensive kinds of audio-visual materials will doubtlessly facilitate their use, but unless teachers select such materials with due regard for their frequent demand, inefficient usage will result. Materials such as reading development titles doubtlessly should be in the teacher's full-time possession or kept at the school's audio-visual headquarters. With the decentralization of equipment and the possibility that certain materials will be placed there eventually, a service center is essential, and the planning of such a center is the next topic.

Planning the School's A-V Service Center. The kind of service system already described demands the planning of an A-V service center in each school building. In terms of either new or old school buildings, space is needed for: (1) the storage of equipment issued to or purchased by the school, (2) the storage of the audio-visual materials issued to or purchased by the school, (3) receiving and filling orders and handling the flow of materials and equipment, (4) the inspection and cleaning of returned materials and equipment, (5) the storage of audio-visual supplies, (6) the pre-use examination center for audio-visual materials, and (7) a central, well-equipped area for constructing photographic and graphic materials.

Directors of audio-visual service programs need to be aware of these elemental needs for servicing teachers in every school, and they should plan accordingly with school superintendents, architects, coordinators, and teachers in connection with all new school-building construction. In old buildings, at least one classroom should be turned over to audio-visual planners for this purpose. A noteworthy example of local planning in the new schools of Portland, Oregon, is what is referred to as the school's Instructional Materials Center. In each new school building, and in all others as rapidly as possible, a large block of space is being provided for centralizing the services in connection with all instructional materials. In charge will be a vice-principal as a curriculum worker able to help teachers with curriculum problems ranging from books to graphics. This kind of comprehensive service, involving all instructional materials, is characteristic of the Portland system. As is often the case when new construction is being planned, too little money is available to provide the space needed. Often severe cutbacks are required, and the writer himself was faced with just this problem in planning a school audio-visual service center for a one-thousand pupil junior-senior high school. This layout, which was designed in the face of serious space limitations, features a compact, combination cart-storage and equipment inspection and service

Fig. 5–11. Space utilization in the A-V service suite at the University of Connecticut Laboratory School. Facilities are shown in the pictorial illustrations. The preview room is 10 feet by 14 feet, and the main working area is 14 feet by 19 feet 6 inches. *(Courtesy Robert Carroll May, Architect, West Hartford, Conn.)*



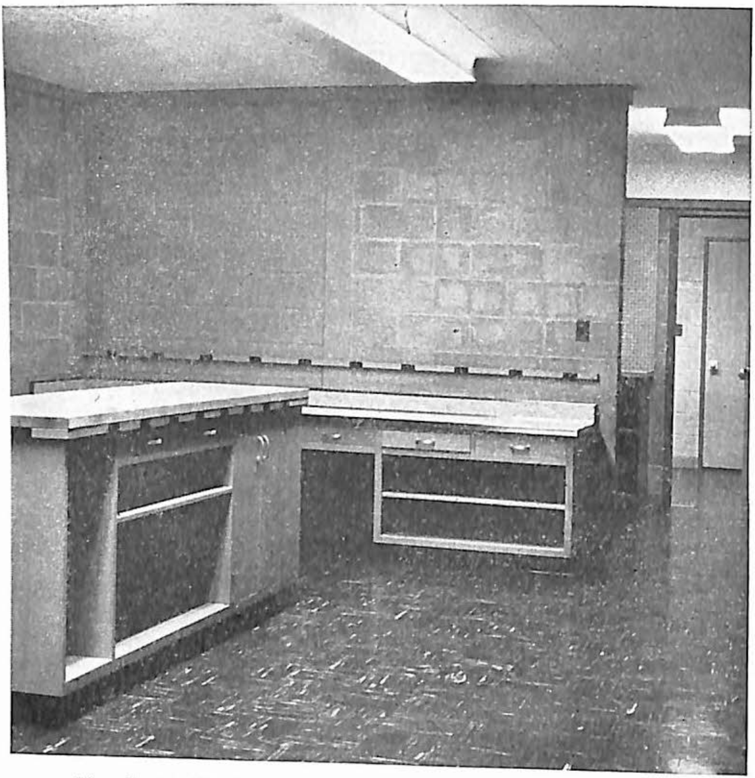


Fig. 5–12. Study this picture in conjunction with Figs. 5–11 and 5–13. Note high and low work tables with underneath storage areas Multiple electrical outlets are placed in wiremold raceways. *(Courtesy Robert Carroll May, Architect, West Hartford.)*

area; a combination office, storage, work space, committee table space, and film inspection area; with well-worked-out flow of incoming and outgoing materials. A small projection room and a photographic dark room are also included. The two large work tables feature underneath storage areas. Two small listening and preview booths and the main preview room are accessible from the school library as well. Equipment deliveries are made to and from the main corridor; hence service traffic to the center will not disturb library study activities. The total effective working area is approximately 570 square feet, far less than usually recommended. A study of the

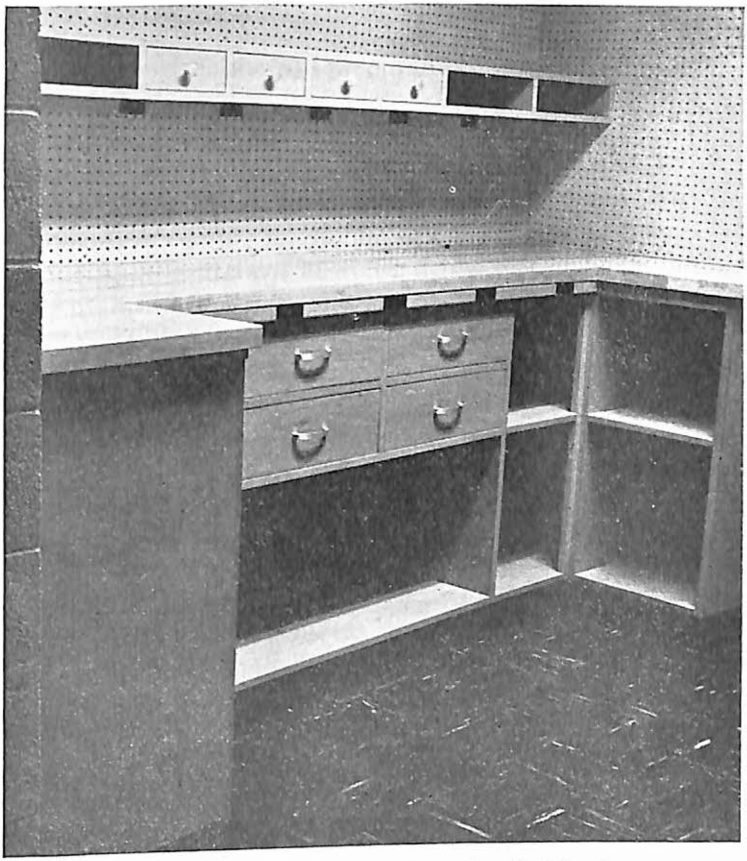


Fig. 5–13.* Equipment inspection and service facility is near mobile projection stand area. *(Courtesy Robert Carroll May, Architect, West Hartford.)

included architect's sketch of this suite will show how the areas were balanced in size. (See Figs. 5–11, 5–12, and 5–13.) The preview room will also be used as a combination recording studio and graphics production room, this work being facilitated by the flat, table-type desks, which can be arranged as needed. Additional large-group preview work will have to be carried on in nearby classrooms. Schools should also incorporate radio and closed-circuit television studios in their preconstruction plans whenever possible, and if restrictions prevent their actual inclusion, wiring provisions may still make future addition less costly. Radio and television facilities are discussed later in Chapter Eight.

In adapting spaces in old buildings for school-building audio-visual centers, critical attention should be paid to the following suggestions:

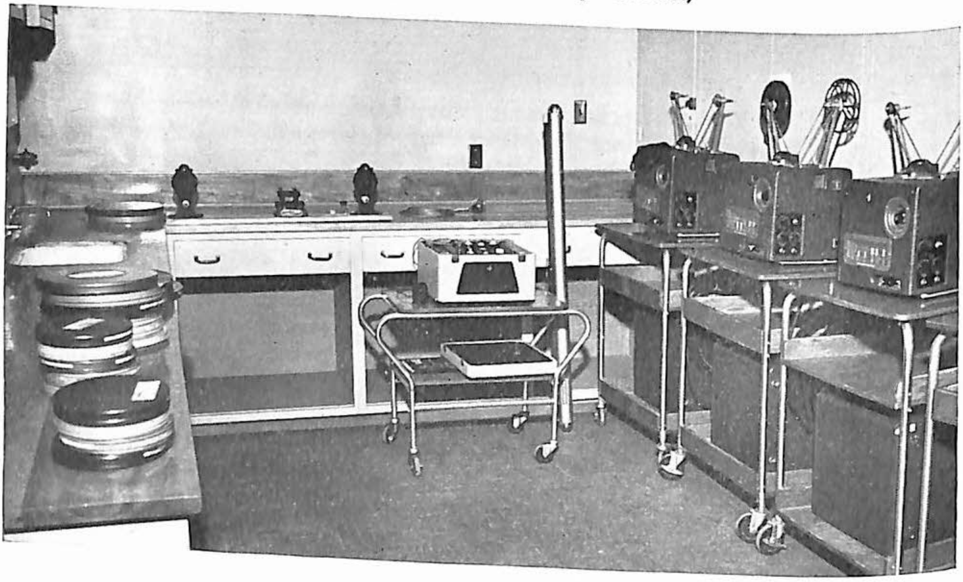
1. Use a minimum number of partitions, thus preserving a large working area in which a flow of work may be planned.

2. Plan a cart-storage area near a doorway to the corridor, and try to expand the cart-storage area by providing a "cart garage" on each floor. A fairly small space will suffice for this purpose.

3. Forego a large preview room if necessary to provide other working and equipment storage areas, especially if another classroom is located close to the service center.

Further discussion of details and specifications regarding the school-building audio-visual service center and its equipment are unnecessary for the present, since the school-system audio-visual center will be discussed in Chapter Six. Significant parts of that discussion

Fig. 5–14. **Best use must be made of available spaces for A-V services in old school buildings. *(Courtesy Los Angeles City Schools.)***



will be applicable, although on a smaller scale, to service centers within each school building. Such plans as have been described indicate the kind of service center that each school should be provided with, and as has also been pointed out, the instructional programs in some schools demand that these service centers be larger and more comprehensive than in others. In the next topic the elements of a service system are shown in operation.

The System in Operation. The service system in each school, as has been discussed in the preceding pages, implies that the following conditions have been fulfilled:

1. All classrooms and other learning activity spaces have been equipped with facilities for audio-visual materials.

2. Equipment units needed by teachers have been assigned to the school for quick, convenient use upon request.

3. Collections of frequently used, less expensive materials have been assigned to the school by the central headquarters.

4. A school-building audio-visual service center has been organized and is open for business. This center is the clearing house for all orders for audio-visual materials and equipment for the school.

5. A responsible staff of trained student operators and clerical workers has been organized and trained and is on hand to carry out the day's projection schedule as needed.

6. An audio-visual leader, the school's coordinator of the audio-visual service program, has been appointed and is available to consult with teachers and to coordinate the flow of service from the school-system headquarters. The coordinator has the necessary prestige in the school, and his importance is recognized by top-level school authorities. He sees to it that the system is set up properly and functions efficiently. The school principal has helped him accomplish his mission by providing released time and, perhaps in some cases where unusually significant curriculum duties are being performed, an extra remuneration, and has appointed an audio-visual committee to help plan the school's program of service. The services of other teachers have been elicited to help with the work load as needed.

Under such conditions there will be a ceaseless flow of materials in and out of the school according to a well-worked-out system, and teachers will make their plans for suitable learning activities with confidence that they can be carried out without distraction or interruption. In carrying out such a system, procedures have to be developed locally that will help keep the service schedule straight. A certain amount of paper work is necessary, although again red tape must be kept to a minimum. A system providing for the following reports and forms will probably be a necessity:

1. A daily log sheet to check incoming and outgoing materials to the school-system center.

2. A daily log sheet for incoming and outgoing rental materials involving insurance numbers of returned packages.

3. A daily or weekly schedule board where projection jobs and assignments of equipment are posted and checked off as materials and equipment units are returned.

4. A motion picture projection request blank that is filled out by the teacher and sent in advance to the school's audio-visual service center. Such a form should call for the following information: projection date, room number, period or time, film title, and of course the name of teacher. This form should be large enough to include arrangements for several film showings.

5. An operator assignment-sheet form that carries special instructions for a specific job. Depending on the need for information about quality of pupil workmanship, the teacher should be encouraged to check on this form the quality of service rendered by the operator, and according to plan, would be required to return the assignment slip to the school's A-V headquarters. Such judgment, if required at all, ought to be asked for in two parts: (a) satisfactory condition of equipment, and (b) satisfactory service of the operator. Such information about the operator would be of value in making objective judgment for awards or in setting up merit ratings.

6. An equipment request form to be filled out by the teacher for other than film showings. Such a form may have to include the following information: date desired, room number, period or time, equipment desired, whether an operator is required, and name of teacher. Such forms are in addition to the regular order forms for materials described in an earlier section, as for example, those of the Seattle school system.

Temporary Makeshift Arrangements for Classroom Audio-Visual Learning Experiences. In unequipped new or old buildings, makeshift arrangements for audio-visual experiences have to be made.

In some schools teachers who are assigned to classrooms with adequate light-control systems are asked to move out for a period with an entire class into a classroom not so equipped while another teacher moves in for a showing of projected materials. To eliminate this undesirable, disturbing and inefficient practice, one or more central school projection rooms (even the auditorium or school stage) are often set up and equipped, special classroom screens are provided that have side- and top-light shields, or portable darkening shades (the Draper Pak-Fold shade is a commercially available example) are supplied. These special provisions demand special attention by the crew of operators. For example, the projection room situation calls for an error-free, room-reservation system to avoid conflicts. Of course the form described in the preceding paragraph (6) could serve this purpose also. A special checking system needs to be set up for such central projection rooms because misunderstandings are almost certain to result in scheduling troubles. Portable shades also demand an extra job of scheduling, and unless the installation of such shades can be made during recesses or before or after school, distracting influences will be introduced into the classroom. Furthermore, small screens for daylight use are not yet satisfactory because the vertical reflection angles are too critical in some; in some others the size limitation does not permit the use of the new type of opaque projectors, and in the case of others, they cannot be mounted on the wall. Such makeshifts are, of course, temporary, and as the school system moves ahead in its program of improving projection conditions, a higher degree of facilitation will result with the service system for teachers operating more effectively and efficiently.

The final aspect of facilitating the use of audio-visual materials has to do with the provision of adequate physical facilities in classrooms and other learning-activity areas such as auditoriums and gymnasiums. Recommendations for such facilities are considered in the next section.

PROVIDING THE RIGHT PHYSICAL ENVIRONMENT FOR AUDIO-VISUAL MATERIALS

One of the greatest obstacles to greater and more effective use of projected audio-visual materials is the absence of proper classroom facilities such as light-control systems, electrical outlets, and projection screens. Relative to this problem the Department of Audio-Visual Instruction of the National Educational Association has exerted a significant national influence upon the thinking of school planners everywhere through a set of well-prepared booklets dealing with the general topic of "Planning Schools for the Use of Audio-Visual Materials." These booklets have concentrated on classrooms and auditoriums and upon audio-visual centers at school building, school system, and university levels. Directors should take steps to disseminate copies of these books among members of every local study and planning group. (The reader is referred to chapter Suggested Readings for a listing of the titles.) Everywhere increasing emphasis needs to be given to the belief that the classroom is or should be a learning laboratory and therefore that for optimum results, class-groups should not be moved elsewhere for audio-visual learning experiences.

All over the country the problem of improving existing classroom conditions is a serious one. In Dallas, Texas, in the remodeling of old schools, a plan was worked out whereby a standard addition was made to each old school building, namely, a gymnasium and a projection room. A policy was also established that the projection room was to be reserved strictly for audio-visual purposes. In San Diego a long-range program of installing light-control systems in classrooms has been in operation, and by 1957, approximately 700 of the school system's 3,000 classrooms had been equipped with drape systems, full closure venetian blinds, or other appropriate devices. The solution to this vital problem demands energetic action.

A sustained, herculean effort should be put forth whenever necessary by the director of audio-visual services in arranging for the inclusion of adequate physical facilities, and the required audio-visual equipment units as well, in the construction and equipment plans for every new school building. Unless this is done, the job of dropping back to equip classrooms in older, long neglected buildings may never be accomplished. The case of West Hartford, Connecticut, is a good example of adequacy in incorporating audio-visual facilities in new construction. After careful study by school authorities, the director of audio-visual services, architects, and building committees, it was decided that it would be much cheaper (not to mention the increased efficiency of instruction) to eliminate the proposed special projection rooms and equip every classroom with adequate light-control systems, and to purchase for the school at the time of construction as standard equipment the amount of projection equipment needed to serve the needs of teachers. While construction costs are bound to vary, the cost of an additional classroom to serve as a projection room would run between $25,000 to $40,000. The arithmetic is simple, and every audio-visual director should perform the following computations: (1) Find out the total cost for equipping each classroom. (2) Compare this figure with the total cost of adding the additional classrooms to serve as projection rooms. West Hartford fortunately followed this policy consistently in the construction of nine additional school plants and in accomplishing three major school remodeling projects. In another instance, among many, as a result of the recommendations sent in to the architect by the building committee for planning the new University of Connecticut Laboratory High School, every classroom was equipped with a traverse-track light control system. Such basic facilities included in all new school buildings would make it possible to meet more rapidly the need for modification of buildings, which, having been poorly planned in an earlier decade, continue to cripple the present-day curriculum.

In view of the existing need for new school-building construction across the land, the prospective director must prepare himself to take proper action in specifying precisely what teachers need and want in their classrooms to facilitate the use of audio-visual experiences. While it would be fine if the director's knowledge regarding school construction made him an authority on the entire subject, the director need not be the architect. He needs to be capable of advising the superintendent and architect accurately on what the requirements are, and then he ought to be able to scrutinize preliminary plans to see that recommendations have been incorporated correctly in the design for construction. A great deal of abuse has been heaped upon certain architects for their designs of school buildings that show no concern whatever for the modern-day use of audio-visual equipment and materials. Such storms of criticism should have been more properly directed to school people and laymen who couldn't make up their minds what they wanted and needed. It doesn't seem likely that an architect will defy a board of education's requests and specifications and force it to accept what it doesn't want.

There is marked agreement today as to the physical facilities that will make possible efficient use of audio-visual materials, and it is up to the prospective director to become familiar with them and to make wise recommendations in terms of local conditions. Such facilities and their arrangement for schools are discussed and illustrated in the subsequent pages. First to be discussed are the all-important classroom considerations.

Classroom Light-Control Systems. Good decisions regarding light control depend upon the director's understanding of relationships between light exclusion, light diffusion, variation in criticalness of observation tasks, environmental attractiveness, and economy. Saying this in another way, the director should seek a light-control system for each classroom that enables the teacher to keep light out, to admit light free of harmful glare, to keep out enough light to permit the most critical picture interpretation task to be carried on unhampered by uncontrolled stray light; and finally he should choose a system that increases the attractiveness of the room and yet is reasonable in cost. It should always be remembered by audio-visual planners that:

1. Projected pictures are less brilliant for viewers seated at the sides of the room, that is, the same amount of stray light affects a picture differently, depending on where the viewer is seated.
2. Reflective powers of different screen fabrics are not equal.
3. Greater light exclusion is needed when color pictures are being projected than for projected black-and-white pictures or black-and-white line drawings.
4. Complete darkening in classrooms is not desirable. Except for special purposes (identification of bacteria by microprojectors), classrooms need be darkenable to the point where only 1/10 foot-candle of illumination falls on the screen.
5. Projectors differ in their efficiency in projecting available light from the lamp to the screen. As everyone knows, the opaque and microprojectors understandably are at the bottom of the list.
6. Satisfactory observation of significant details in projected pictures is the criterion for judging the adequacy of light exclusion.
7. Projected pictures are more appealing generally under conditions of subdued illumination. This is probably true because distractions are likely to be less intense.

Architects need also to be informed that window designs are desired that will facilitate the installation of light-excluding and diffusing systems. The following restrictions should be placed upon his planning:

1. No skylight should be permitted in any classroom.
2. Bottoms of interior glass panes should be located at least one foot above any ventilators, shelving, or other obstruction, if shades or drape traverse systems have been specified as the darkening devices. This restriction may be removed if full-closure venetian blinds are specified.
3. Window area should be reasonable not excessive.
4. Appropriate wood or metal mounting strips for all darkening devices should be built into ceiling structures, at the required distance from window panes. Ceiling slots and/or window-sill slots for roller shades are to be provided whenever appropriate.
5. Windows should be allowed on one wall only.
6. Clerestory designs should be avoided.
7. Enough wall space should be provided on either side of window-walls to make possible a minimum side overlap of drape systems of 2 feet. This restriction may be removed when full-closure venetian blinds are specified.
8. Windows should be designed so as to permit opening outward only, to avoid interference with present or future darkening-system installations.

Windows are likely to be of the same design and size in classrooms, but different in other learning activity areas like the auditorium and gymnasium. Also, windows in interior or exterior doors ought to be covered; hence the director should note the following suggested applications of darkening systems to kinds of windows and to various sizes and locations.

1. *For window walls, vision strips, and glass-brick expanses:* Drape traverse-track systems of plastic or other serviceable, noncombustible material with nondeteriorating and colorfast properties; overlapped, 3-foot-wide, opaque roller shades, light color preferably for room attractiveness, operating from fixtures in a ceiling slot, or from the Draper XL continuous, angle-iron strip; or full-closure venetian-type blinds in appropriate colors. (See Figs. 5–15, 5–16, 5–17, and 5–18.)

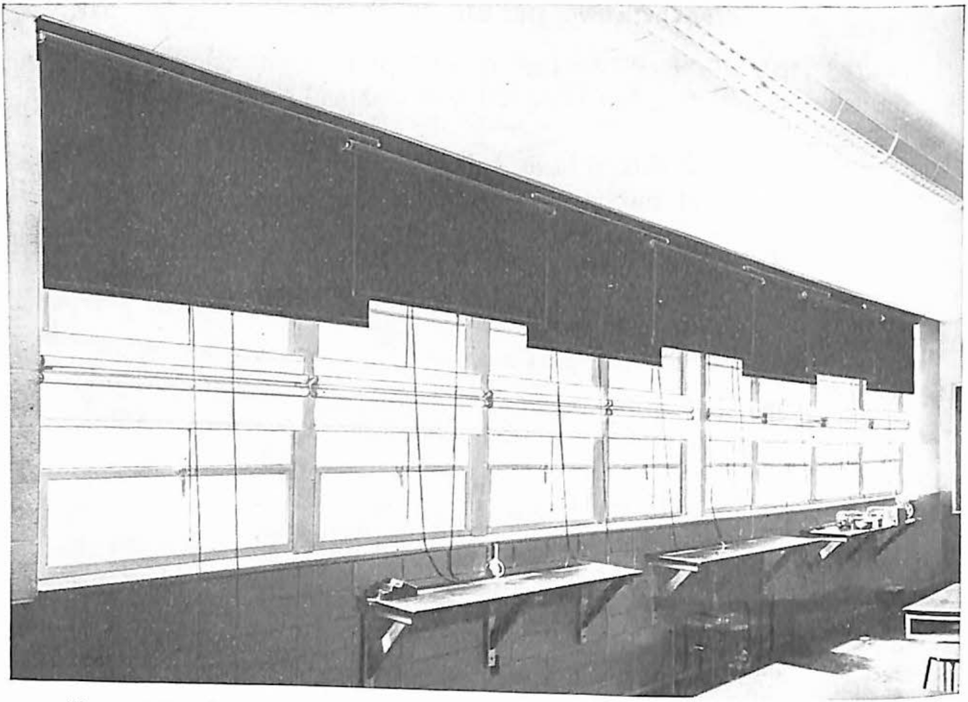


Fig. 5–15. This is an installation of the Draper XL shading unit. Note also the light-diffusion system needed because of direct exposure to the sun. *(Courtesy Luther O. Draper Shade Company, Spiceland, Indiana.)*

2. *For windows 4 feet or less in width and* 8 *feet or less in height and within reach:* Full-closure venetian blinds of appropriate colors; and opaque roller shades without groove system or enclosures of any kind, except a hinged, wooden shutter. (See Fig. 5–19.)

3. *For windows over 8 feet in height and within reach:* Drape traverse-track system, with two separate systems being used with vertical overlap, if weight of drape due to excessive height would stretch the material.

4. *For wide windows 2 feet high or less:* Full-closure venetian blinds; overlapped, opaque roller shades; or fire-resistant cloth, or drape, traverse-track system. Short lengths of plastic of desirable gauge are somewhat stiff, thus interfering with normal hanging and stacking action.

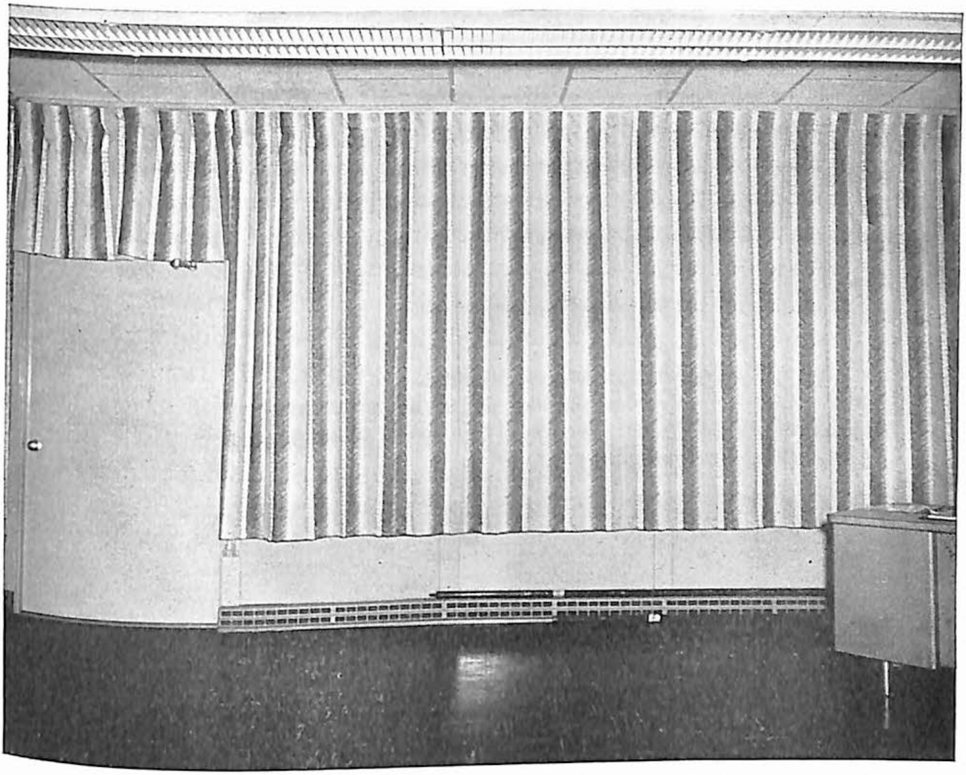


Fig. 5–16. The light-control system for this classroom includes a plastic drape traverse darkening installation. ***(Courtesy Art Zeiller Co., Allendale, New Jersey.)***

5. *For recessed out-of-reach windows:* Overlapped, opaque roller shades in a Draper XL mounting flush with wall.

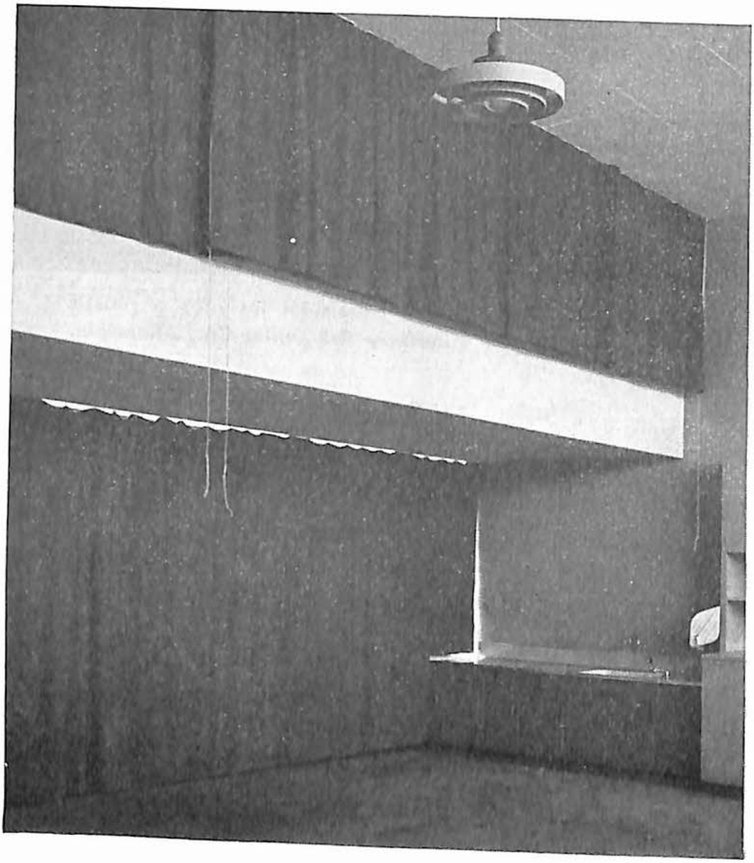
6. *For windows in gymnasium situations:* Heavy-duty treated cloth, wood-strip reinforced, folding window cover (Forse Mfg. Co., St. Louis, Mo.), or Draper XL mount, overlapped, opaque shades of heavy duty cloth. If gymnasium is a combination auditorium-gymnasium, heavy-duty, plastic-drape traverse systems ought to be specified for the sake of much needed attractiveness.

7. *For windows in auditorium situations:* Attractive, plastic-drape, traverse-track systems, with an additional recessed traverse system using light-diffusion plastic material if sun exposure is direct

during school hours. Window drape system should harmonize with plastic- or velour-drape systems on stage.

8. *For all windows with direct sun exposure:* Combination, diffusion and exclusion systems are essential. That is, use two sets of suitable drape traverse systems on separate tracks, or operating on a double draw and single track with the diffusion drape operating when the exclusion drape is stacked; use two sets of roller shades, one

Fig. 5–17. Double-drape traverse systems like this are expensive. Are window designs like this desirable? *(Courtesy Bureau of Audio-Visual Education, California State Depart- of Education, Sacramento.)*



set translucent and one opaque, or use the all-purpose full-closure venetian blinds.

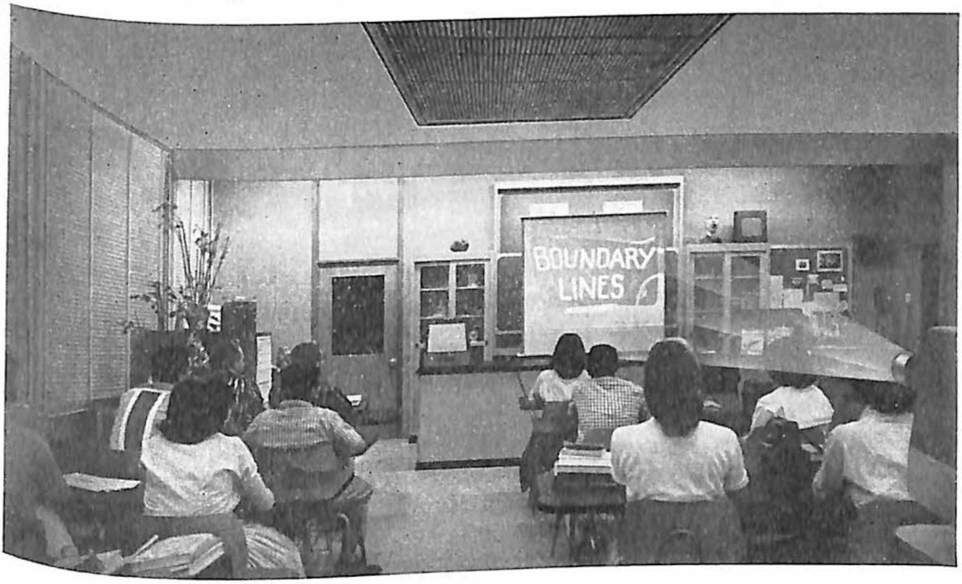
Many unbelievable errors are made when specifications for light-control systems are written by individuals who do not understand school problems. Prospective directors, to avoid common pitfalls, would do well to consider the following suggestions when preparing their specifications:

1. Direct orders for light-control installations to experienced school suppliers, not to local department stores, and if this is not feasible, personally supervise or employ a supervisor to see to it that all specifications are complied with.

2. Locate the best classroom drape-system designer and fitter in the area and get his advice in preparing specifications.

3. Prepare a detailed set of specifications for bids as free of loopholes as possible.

Fig. 5–18. Full-closure Venetian blinds have been installed in this classroom to darken the window wall and the skylight. ***(Courtesy Levelor Lorentzen, Inc., Hoboken, N.J.)***



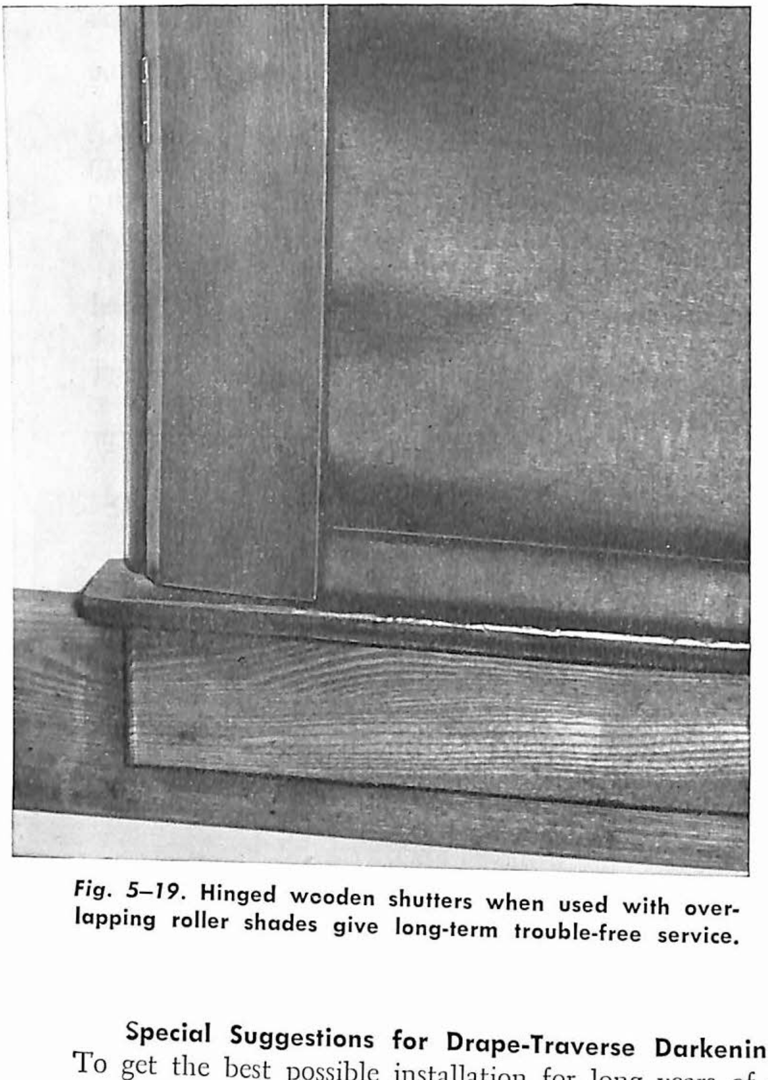


Fig. 5–19. Hinged wooden shutters when used with overlapping roller shades give long-term trouble-free service.

Special Suggestions for Drape-Traverse Darkening Systems. To get the best possible installation for long years of trouble-free service, the Director of Instructional Materials at San Diego worked out a set of detailed specifications for bidders on drape systems involving material, hardware, and installation. General items in those specifications included: (1) specification as to quality of workmanship and guarantee, (2) the demand that an identity tag of supplier be affixed to each drape installation, (3) a stipulation that fabric characteristics be fully certified, and (4) that acceptance would be subject to inspection. Specific items dealt with material, opaqueness, color, fireproof quality, nontoxic quality, manufacturer and brand name; light leakage, heading construction, sew hooks, seams, hems, flat construction, tiebacks, fullness, center overlap, return free of obstruction, vertical and horizontal extensions (bottom and sides), cut-outs for exterior doorways, door panels, selvage; track, pull cord, nylon carriers, track splicers, pulleys, floor pulleys, end stops, ceiling brackets, wall brackets, screws; track suspension, separate tracks or track overlap, curves, and mounting battens.

Directors need to make a careful study of at least the heavy-duty suspension and traverse-track hardware and the required matched accessories. To leave these details to someone who doesn't know the requirements is to invite long-lasting trouble. The San Diego darkening program also provides the successful bidder with instructions as to placement in each room.

In writing up local specifications the director should be guided by the following suggestions:

1. Drape material should overlap at the center of two panels by 1 foot and at sides and bottom of window area by 18 inches.

2. It is better to use two tracks, one for each drape panel, if light-diffusion devices are already provided for; otherwise a single, double-draw track may be so arranged that two separately operating drape systems may be mounted upon it.

3. Tracks should be of heavy-duty construction.

4. Drapes should be opened and closed by a vertical pull system.

5. Contrary to the opinions of some suppliers, 50 per cent additional material should be added to dimensions of window opening for fullness.

6. Nylon drape rollers should roll on the track system in the same position as train wheels, thus bearing the load on the roller axes while in a vertical position.

7. The drape supplier should demonstrate that his recommended heading construction can bear the weight of the plastic fabric without tearing loose.

8. The suspension device for the track, if it is to be mounted on the wall above the window, ought to be a sturdy angle iron, and if it is to be mounted to the ceiling, it ought to be a sturdy and level wood or metal strip to permit unhampered movement.

9. Mounting brackets for the track must be sufficient in number to keep the track level during operation; near the ends of the drape track, twice as many mounting brackets ought to be installed.

10. Drape fabric must run free of obstructions.

11. It is usually best to mount the track 12 to 18 inches away from the window.

12. Tracks may run in any desired pattern in a room, curved or straight; therefore drape panels may be moved away from a window wall to block off any desired part of a classroom for a desired projection location.

13. Whenever drape systems are to be installed in new buildings, the traverse track should be installed as a part of the construction contract. Drapes themselves should also become a part of the equipment contract.

Specific Suggestions for Opaque Roller Shades. It is a disturbing sight to see new roller-shade fabric half pulled off the rollers at the window-sill level. To prevent this and to make possible many years of trouble-free service, directors should include the following in their local specifications:

1. The finished length ought to be long enough to reach 1 foot below the sill.

2. Bottom corners ought to be reinforced by stitching on extra corners of fabric.

3. Light exclusion shades ought to be mounted outside of window casing, overlapping it at top and sides by 2 to 4 inches.

4. Light-diffusion shades or other devices should be mounted inside casings.

5. No channels or edge slots should be permitted.

6. The mounting devices for overlapping opaque roller shades on wide windows ought to facilitate easy replacement of shades, such as is the case with the Draper XL unit.

7. Darkening shades ought to be mounted at top of window, not in the middle as are double-roller systems.

8. Heavy-duty rollers and fixtures ought to be installed for shades wider than 3 feet.

Specifiic Suggestions for All-Purpose Full-Closure Venetian Blinds. Several makes and models of full-closure blinds are available, and it is up to the director again to seek trouble-free operation for the teachers' convenience and for distraction-free learning activities. Therefore the following suggestions need to be borne in mind:

1. Gloss-finished slats are easy to keep clean, but they are highly reflective. Light-dimming calls for light absorption by flat, dark tones of paint.

2. Sturdy-structure, built-in, wide sections (up to 7 feet) with unsagging slats ought to be selected. The many operations required when eight narrow sections, for example, are arranged channel to channel along a window wall may be time consuming and an annoying chore even for youngsters.

Special Warning about Channels for Shades. Contrary to the thinking of many, metal or wood enclosures for roller shades are not recommended. Such channels and slots wear out the curtains, and no such system of darkening has ever given trouble-free service for long periods of time. To be sure, leatherette-type fabrics, traveling behind metal plates or in side slots, provide extremely dark interiors, but this condition is not normally desirable in classrooms. Therefore the author recommends it only for clinical or diagnostic laboratories and training situations where such activities as high-power microprojectors are in critical use.

Desirable Lower Limits of Illumination and Light Control. It was pointed out earlier that modern instruction calls for variation in observational tasks with projected audio-visual materials, and hence it is sometimes necessary to have the room very dark, while for other classroom activities sufficient light must be available to observe the screen and to write or draw simultaneously. It is therefore advisable to exclude light to the desirable limit where only 1/10 foot-candle of illumination falls on the screen. (See Figs. 5–20, 5–21, and 5–22.) Then, as demanded by instructional activity, it is necessary to be able to increase the illumination by operating room-light dimmers or by turning on additional switches for low-wattage lamps properly placed behind the screen, at the rear and sides of room, or in the ceiling. Many times it is important to take notes during a projected presentation, and approximately 1 foot-candle of illumination on note paper is adequate for this special task. However, it is imperative that such illumination be directed downward and not onto the projection screen during critical observation. In general, projection screens should be mounted on the wall, and since a behind-the-screen lamp

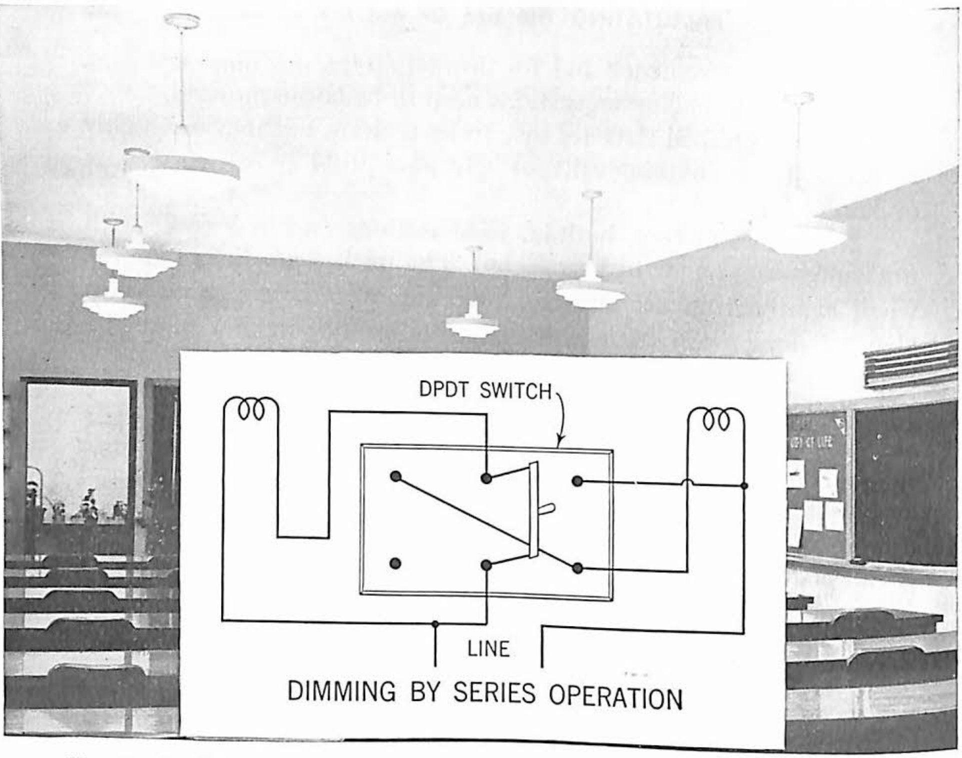


Fig. 5–20.* Effective classroom light-control systems include the means for varying the amount of general illumination. *(Courtesy, General Electric Co., Lamp Division, Nela Park, Cleveland.)

would demand special, protruding, screen brackets, and since floor-stand lamps or lamps clamped to projection stands operated on variable auto-transformers would be inconvenient, other desirable methods of obtaining controlled general illumination ought to be provided. Allen[8] has made several good suggestions. The first of these is the use of ceiling down-lights; for example, 75-watt R30 reflector lamps, over the seating area, on dimmer control to supply 1 foot-candle of illumination on note paper, which under this light is

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[8] Carl J. Allen, *Lighting the Audo-Visual Classroom*, Lamp Division, General Electric Company, Nela Park, Cleveland, Ohio. Reprinted from the *Bulletin of the School of Education*, Indiana University, Bloomington, Indiana, September 1955, p. 110.

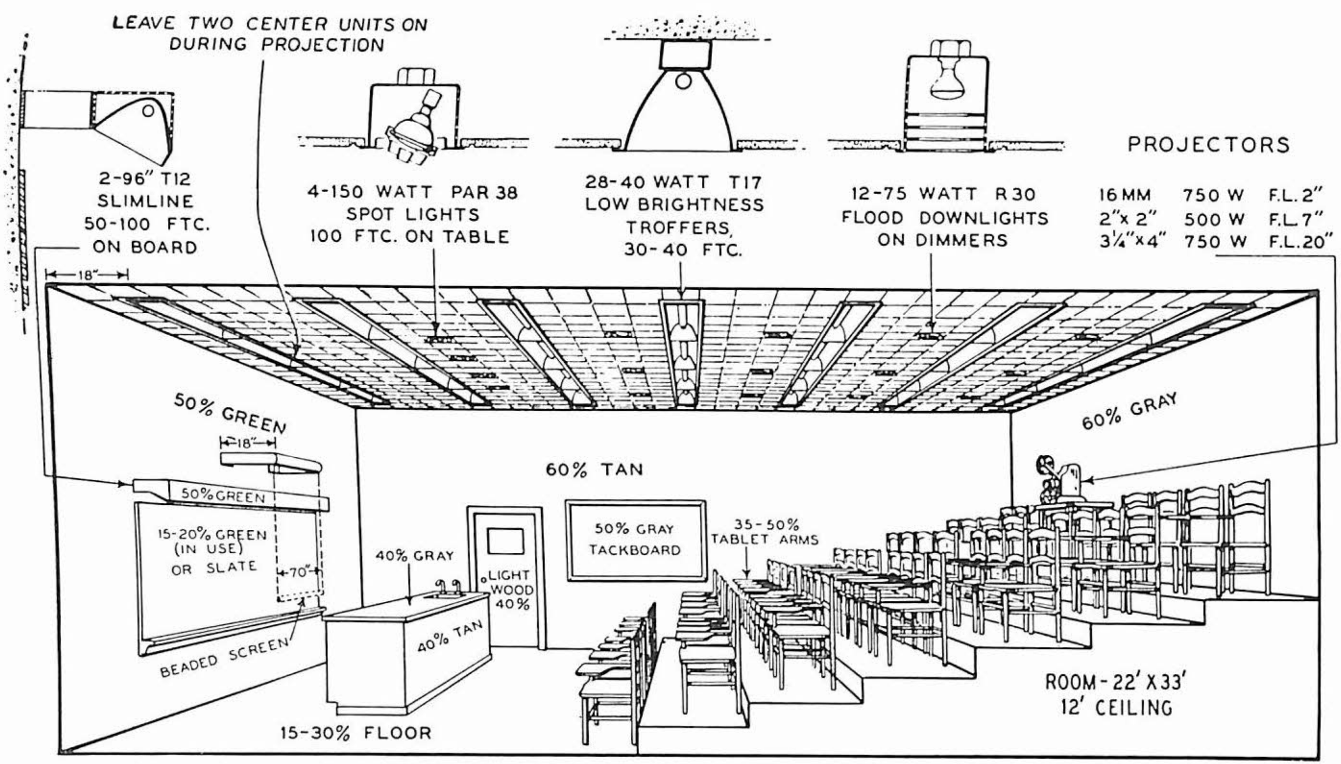

LEAVE TWO CENTER UNITS ON DURING PROJECTION
2-96" T12 SLIMLINE 50-100 FTC. ON BOARD
4-150 WATT PAR 38 SPOT LIGHTS 100 FTC. ON TABLE
28-40 WATT T17 LOW BRIGHTNESS TROFFERS, 30-40 FTC.
12-75 WATT R30 FLOOD DOWNLIGHTS ON DIMMERS
PROJECTORS
16 MM 750 W F.L. 2"
2"x 2" 500 W F.L. 7"
3¼"x4" 750 W F.L. 20"
18"
50% GREEN
18"
50% GREEN
15-20% GREEN (IN USE) OR SLATE
70"
BEADED SCREEN
40% GRAY
40% TAN
LIGHT WOOD 40%
60% TAN
50% GRAY TACKBOARD
35-50% TABLET ARMS
60% GRAY
ROOM - 22' X 33'
12' CEILING
15-30% FLOOR

Fig. 5–21. **What important concepts about light control are revealed in this diagram? Where should the clock, central sound system loudspeaker, and ventilation ducts be located? What conduits should be recommended? (Courtesy *General Electric Co., Lamp Division, Cleveland.*)**

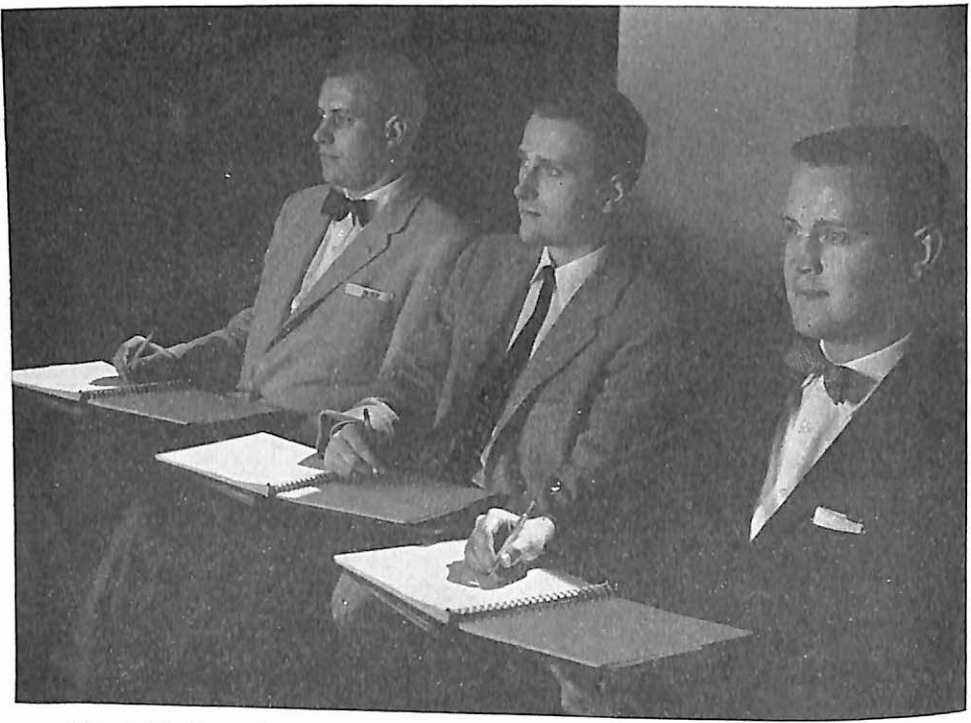


Fig. 5–22. **Down lights must not throw light on the screen. One foot-candle of illumination on notebook paper is desirable.** ***(Courtesy Eastman Kodak Co., Rochester.)***

in favorable relationship to the normal brilliance of the screen. The second way to make provision for added illumination in new construction is to use the method whereby, for example, with six silvered bowl fixtures the rear two are operated in series with a double-throw, double-pole switch to control them. By such an arrangement of the general lighting, with only two rear fixtures operating, a normal total illumination of 30 foot-candles with all six bowls lighted would be reduced to approximately 1 foot-candle. The director should talk over such plans with local lighting engineers or with the architect. Most classrooms make no provisions for such desirable lighting control.

Classroom Wiring Recommendations. The prospective director must make certain that his recommendations include adequate wiring requests for present and future instructional demands. Heavy-duty, rubber-covered wiring should be prescribed throughout, together with the following items:

1. Three, double, 2,000-watt capacity electrical outlets: one on front wall, one at rear, and one on the side wall opposite the window, all to be no more than 18 inches above the baseboard. If only two are allowed, the side-wall outlet should be eliminated. Specifications for additional outlets as needed for other special purposes in shops, business education rooms, language laboratories, etc., must be incorporated in the over-all plans. The director should check to see that none is omitted.

2. Ample number of circuits to provide each classroom with a minimum of 20 amperes at the outlets in addition to illumination.

3. Standard 1¾ inch diameter conduit system for closed-circuit television and central sound system; with junction boxes in the front wall near baseboard of each classroom, in the library, and auditorium and also appropriately placed in the central administrative office.

4. A three-way on-off switch should be located on the rear wall near the projection station, thus permitting control of illumination from both front and rear of the room.

5. A ¾ inch conduit line for speaker, with appropriate end receptacles, to run through floor from rear wall to front of room to connect projector amplifier with speaker. This conduit must be in addition to regular a-c power lines.

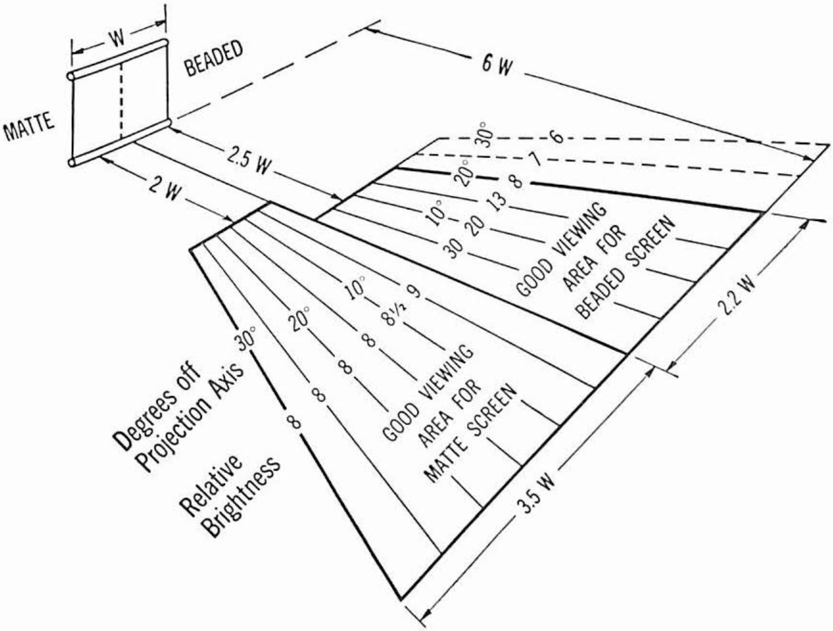
6. Junction boxes for central sound system, permanently installed wall speakers, must not be located at front of room anywhere within the central 7-foot by 7-foot area above chalkboard-tray level for any given room. The loudspeaker for the central sound system should be mounted preferably in a front corner, beaming sound down at the classroom's center.

Projection Screens and the Classroom Layout. Many unpardonable decisions have been made in planning classrooms that have a bearing upon projection screen problems. One of the foremost principles of screen placement is that the projection screen be permanently mounted on the wall for optimum viewing and for facilitating the use of projected materials. When air ducts, electric clocks, central-sound-system speakers, and flag holders are deliberately located in the central area of the front wall above the chalkboard, it can be assumed that the planner is either ignorant of, or is acting in defiance of, the need to make provisions for audio-visual methods. Not only do projection screens have to be selected appropriately in terms of the shape and size of the classroom, and in terms of the kind of material to be projected upon them, but also they have to be properly placed for optimum viewing conditions. Since the facts about screens are so significant for both teachers and architects, the prospective director must be prepared to give good counsel. Careful study of the following facts, recommendations, and illustrations will assist him making correct judgments:

1. *Kinds of Screens and Their Reflection Characteristics.* The white glass-beaded screen; the matte-white screen; the silver-color, smooth-surface, roll screen; and the processed silver, ribbed aluminum, or metalized mylar, flat panel or roll-type screen are the commonly available screens for classroom use; each of these has its own characteristics. The glass-beaded screen and the matte-white screens are very commonly known and are frequently compared. Of the two, the beaded screen gives the brighter picture when the viewer is nearer the projection axis (the perpendicular line from the projector to the screen), but the brightness falls off quickly for viewers who are seated to the right or left of the axis. The desirable observation angle for the glass-beaded screen is 40 to 50 degrees, or 20 to 25 degrees on either side of the axis. Light from the matte-white screen is not reflected back along the path from which it came but is highly diffused outward from the screen. Hence, while not so bright from the projector position, light from the matte-white screen is actually spread out more evenly throughout the observation angle of 60 degrees, or 30 degrees on either side of the projection axis. (See Fig. 5–23.)

In a 1947 research report publicized by the Radiant Screen Company, it was shown that the glass-beaded screen was approximately 300 per cent brighter than the matte-white screen for viewing positions along the projection axis, but that outside of the recommended 45-degree observation angle, the matte screen was superior. According to the same report, the silver-color roll screen, recommended for three-dimensional projection purposes, had approximately the same reflection characteristics as the glass-beaded screen at about the same observation angles. The processed silver, ribbed aluminum, and metalized mylar screens, sold first as flat panels and then later as roll-type screens by the Universal Screen Company, reflect a little more light than the glass-beaded screen and have even wider observation angles than the matte screens. However, such screens need to be tipped downward properly toward the viewers so that the brightness of the picture will not be decreased. A new and more highly reflective matte-white screen, developed by the Radiant Manufacturing Corporation and known as Uniglow, is about on a par with the metalized mylar screen, both as to reflection and width of viewing angle. This new type of daylight screen needs to be approximately 6 feet wide to permit the use of the opaque projector with 26-inch focal-length lenses. The Uniglow screen provides an unseamed fabric up to 70 inches square in a roll-type screen; however, neither of the roll-type daylight screens

Fig. 5—23. Where is the projection axis in this diagram? If viewers sit closer than 6 feet, will a bead pattern be annoying? Study the relative brightness figures and draw a conclusion about the evenness of light reflection by the two types of screens. ***(Courtesy Eastman Kodak Co., Rochester.)***


W
BEADED
MATTE
6 W
2.5 W
2 W
30°
6
20°
7
8
10°
20
13
30
20
GOOD VIEWING AREA FOR BEADED SCREEN
10°
8½
9
20°
8
30°
8
8
8
Degrees off Projection Axis
Relative Brightness
GOOD VIEWING AREA FOR MATTE SCREEN
2.2 W
3.5 W

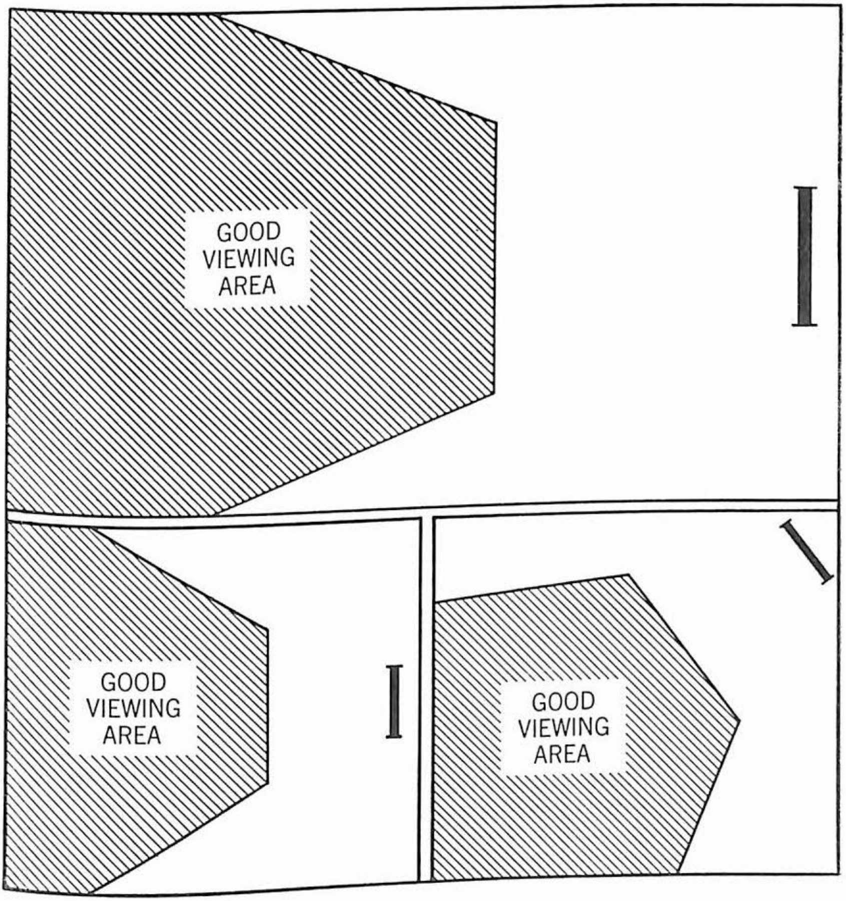
is available for desirable mounting on the wall. Solid-panel screens are too bulky to transport, and unless a screen of desirable size can be mounted permanently on the wall, it should be purchased and used only as a makeshift. Writing correct screen specifications is a crucial matter, and hence the director needs to take necessary precautions.

2. *Projection Screens and the Shape of the Classroom.* Because of the narrower observation angles of the glass-beaded screen and silver-color, three-dimensional screen, they are recommended for long classrooms where a large number of viewers may be arranged along the projection axis. Square rooms, and rooms that are wider than they are long, call for the matte-white screen for widest possible viewing away from the axis. And of course the flat-panel, metallic-type screens are not recommended except where no darkening system is feasible and some projection has to be done. (See Fig. 5–24.)

3. *Size of Screen Required.* Recommending the size of screen is not a matter of guesswork or of what looks best in a classroom. This decision has to be made in terms of adequate visual observation of pictorial content. The size of picture needed by any viewer in the classroom is the criterion. A simple rule of thumb has been worked out that will be invaluable in making quick decisions. This rule uses the last row of viewers in a room as a standard of reference, and it is simply this: The width of the picture needed in any room is approximately one-sixth of the distance from where the screen is to be placed to the last row of observers. Of course the distance to any other row would be less, and consequently the size picture needed for each row in general would be less, but the size for the last row is used as the standard. There is one adjustment that has to be made; this is in the event that an opaque projector for 10-inch by 10-inch copy is to be used with a 26-inch focal-length lens. In this case, unless an extension of the lens barrel is employed, a picture of less than 6 feet cannot be generally obtained in sharp focus. Thus in a classroom where the distance from the proposed location of the screen to the last row of observers is 30 feet, the picture width called for would be 5 feet. A 5-foot screen will not accommodate the 6-foot opaque projector picture just mentioned, therefore a 6-foot screen should be specified. Viewers need to see pictorial details, or to identify symbols, and if they are not sufficiently enlarged, this process is hindered.

Television screens are no exception to the one-sixth rule, but it should be remembered that composition of the television picture is largely of the close-up type. Thus, in general, kinescopes of television programs can be shown on smaller screens than would generally be appropriate for a regularly composed motion picture or still picture with small details that have to be observed. Another rule for arriving

Fig. 5–24. What types of wall-mounted screens should be recommended for the above situations? What other projection problems will have to be defined and solved in each case? *(Courtesy Eastman Kodak Co., Rochester.)*



at needed screen size involves the width of the projector aperture in inches. Some of the standard apertures are as follows: 16-mm motion picture projector, 0.38 inch; 3¼-inch by 4-inch slide projector, 3 inches; single-frame filmstrip projector, 0.906 inch; and 2-inch by 2-inch slide projector, 1.34 inches. The rule is as follows: To find desirable screen width, multiply the aperture in inches (of the projector being used) by the distance of projector to the screen in feet, and divide by the focal length of the lens. One word of caution should be given. Screen width and width of picture may be two different things, and the two expressions should not be used loosely. The size of picture needed in a given room determines the screen size. Directors should make sure that this, not the opposite, is the case in practice.

4. *Shape of Screen to Specify*. It is annoying to project the square image of some opaque material onto a motion picture screen and find that important parts of the material are being reflected from the wall instead. This is also the case with vertical-slide images. The answer is to specify square screens or move the projectors close enough so the vertical images will fit within the vertical dimensions of the incorrectly shaped screen. Square screens should be specified where various kinds of projected materials are to be used. However, a difficulty arises where the ceilings are not high enough to permit the mounting of a screen so that the bottom of a square screen falls at the eye level of the viewer. In such cases money is wasted on the square screen because the heads of viewers are bound to cast objectionable shadows on the screen area, or viewers up front will block the vision of those in the rear.

5. *Focal Length of Lenses for Optimum Picture Size*. Previously the size of picture needed, and hence the size of screen needed, was discussed. It now needs to be explained that various projectors are usually equipped with standard focal-length lenses based on average classroom size. For example, a 30 foot long classroom requires a 5- or 6-foot screen, and the 2-inch focal-length lens that is standard equipment on the motion picture projector would throw at 30 feet a picture that is 70 inches wide by 52 inches high. Because of seating arrangements, many times projectors have to be placed either closer to or farther away from classroom screens than normally desired, thus making the projected pictures too small or too large. Such situations call for other than regularly supplied lenses. If lens and picture-size

tables are studied, good judgments can be made in specifying special size lenses or the required screen size for all projection situations normally encountered. (See Tables 5–1 through 5–7.) Extra lenses may be kept at school service centers and supplied as needed, or when projectors are ordered, special lenses of required focal length may be requested as substitutes for the standard equipment. The director should make sure that the following generalizations, obvious in the tables provided, are fully understood; otherwise, costly mistakes may be made and incorrect advice given.

a. The longer the focal length of a lens for a given kind of projector, the smaller will be the picture projected at any given distance. (The reader should examine the tables and state a similar generalization, using *shorter* instead of *longer.*)
b. The closer a projector is moved toward the screen, the smaller will be the picture if the focal length of the lens is kept constant. (Is the effect of moving the projector away from the screen obvious?)

In considering the use of special lenses, the director should be aware of some of the limitations. A projected picture using the same projector and lamp becomes brighter as it gets smaller and less bright as it becomes larger. Therefore, a picture may be made only as large as the details of the pictorial content will permit, or as large as the power of the lamp will permit.

6. *Classroom Layout of Projection Arrangements.* In the preceding pages a number of important factors have been discussed that contribute greatly to increased use of classroom experiences using audio-visual materials. It is now time to relate many of these factors to a classroom unit and to consider aspects of arrangement. There seems to be a persistent inclination by some to forsake the comfortable, normal straight-ahead viewing of projected images on a front-wall screen for the viewing of images on a corner-mounted screen. In theory a corner-mounted screen offers rich opportunities to arrange viewers close to the projection axis, but the normal orientation of movable or fixed desks is, of course, toward the front of the room not toward any one corner. Actually, corners in today's schools aren't very free of screen obstructions; therefore, unless the room is unique in

Table 5–1. Motion Picture Projector Lenses and Their Relationship to Screen Size at Given Projection Distances (Courtesy of Radiant Mfg. Corp.)

	16-mm Sound and Silent		Projector To Screen Distance															
			8′	10′	12′	15′	20′	25′	30′	35′	40′	45′	50′	60′	75′	100′	125′	150′
Lens Focal Length	1″	Screen Width	40″	50″	60″	70″	94″	10′	12′	14′	16′	18′	20′					
	1½″				40″	50″	60″	84″	94″	9′	10′	12′	12′	16′	20′			
	2″					40″	50″	60″	70″	84″	94″	9′	10′	12′	14′	20′		
	2½″						40″	50″	60″	70″	84″	84″	8′	9′	12′	16′	20′	
	3″							40″	50″	50″	60″	70″	84″	8′	10′	16′	16′	20′
	3½″								40″	50″	50″	60″	70″	84″	8′	12′	16′	16′
	4″									40″	50″	50″	60″	70″	84″	10′	12′	16′

Table 5–2. Filmstrip and 2-inch by 2-inch Slide Projector Lenses and Their Relationship to Screen Size at Given Projection Distances, Using Double and Single Frame Materials. (Courtesy of Radiant Mfg. Corp.)

35-mm Filmstrips 2″ by 2″ Slides	Lens Focal Length	Projector To Screen Distance													
		10′	15′	20′	25′	30′	35′	40′	45′	50′	60′	70′	80′	90′	100′
Single Frame Image		Square Screen Size													
	3″	40″	60″	7′	8′	9′	12′	12′	14′	16′	18′				
17.5-mm by 23-mm (0.692″ by 0.906″)	4″	40″	50″	60″	70″	7′	8′	9′	12′	12′	14′	16′	18′		
	5″		40″	50″	60″	70″	7′	8′	9′	9′	12′	14′	16′	18′	18′
	6″		40″	40″	50″	60″	70″	7′	7′	8′	9′	12′	12′	14′	16′
Maximum Aperture 0.906″ by 0.906″	7″			40″	40″	50″	60″	70″	70″	7′	8′	9′	12′	12′	14′
	8″			40″	40″	50″	50″	60″	70″	70″	7′	8′	9′	12′	12′
	9″				40″	40″	50″	50″	60″	60″	7′	7′	8′	9′	10′

35-mm Filmstrips 2″ by 2″ Slides	Lens Focal Length	Projector To Screen Distance													
		10′	15′	20′	25′	30′	35′	40′	45′	50′	60′	70′	80′	90′	100′
Double Frame Image		Square Screen Size													
	3″	60″	7′	9′	12′	14′	16′	18′	20′						
23-mm by 34-mm (0.906″ by 1.34″)	4″	40″	70″	7′	9′	10′	12′	14′	16′	18′	20′				
	5″	40″	50″	70″	7′	8′	10′	12′	12′	14′	16′	20′			
	6″	40″	40″	60″	70″	7′	8′	9′	10′	12′	14′	16′	18′	20′	
Maximum Aperture 1.34″ by 1.34″	7″		40″	50″	60″	70″	7′	8′	9′	10′	12′	14′	16′	18′	20′
	8″		40″	40″	60″	60″	70″	7′	8′	9′	10′	12′	14′	16′	18′
	9″			40″	50″	60″	70″	70″	7′	8′	9′	12′	12′	14′	16′

Table 5–3. Relationship of 2¼-inch by 2¼-inch Slide Projector Lenses to Screen Size at Given Projection Distances
(Courtesy of Radiant Mfg. Corp.)

2¼″ by 2¼″ Slides	Lens Focal Length	*Projector To Screen Distance* 10′	15′	20′	25′	30′	35′	40′	45′	50′	60′	70′	80′	90′	100′
		Square Screen Size													
Maximum Aperture 2⅛″ by 2⅛″	5″	60″	7′	10′	12′	14′	16′	18′	20′						
	6″	50″	70″	7′	9′	12′	14′	16′	16′						
	7″	40″	60″	7′	8′	9′	12′	12′	14′	16′	20′				
	9″	40″	50″	60″	7′	7′	9′	10′	12′	12′	16′	18′	20′		
	12″		40″	50″	60″	70″	7′	7′	8′	9′	12′	14′	16′	16′	18′

Table 5–4. Relationship of 3¼-inch by 4-inch Slide Projector Lenses to Screen Size at Given Projection Distances
(Courtesy of Radiant Mfg. Corp.)

3¼″ by 4″ Slides	Lens Focal Length	*Projector To Screen Distance* 10′	15′	20′	25′	30′	35′	40′	45′	50′	60′	70′	80′	90′	100′
		Square Screen Size													
(Lantern)	6″	60″	8′	10′	14′	16′	18′	20′							
Maximum Aperture 3″ by 3″	9″	40″	60″	7′	9′	10′	12′	14′	16′	18′	20′				
	12″	40″	50″	70″	7′	8′	9′	10′	12′	14′	16′	18′	20′		
	16″		40″	50″	60″.	70″	7′	8′	9′	10′	12′	14′	16′	18′	20′
	20″			40″	50″	60″	70″	7′	7′	8′	9′	12′	12′	14′	16′
	24″			40″	40″	50″	60″	60″	70″	7′	8′	9′	10′	12′	14′

Table 5–5. Opaque Projector (6-inch by 6-inch Aperture) Lenses and Their Relationship to Screen Size at Given Projection Distances

(Courtesy of Radiant Mfg. Corp.)

Opaque Projection	Lens Focal Length	*Projector To Screen Distance*											
		10′	15′	20′	25′	30′	35′	40′	45′	50′	60′	70′	80′
		Square Screen Size											
Maximum Aperture 6″ by 6″	14″	60″	7′	9′	12′	14′	16′	18′	20′				
	16″	50″	70″	8′	10′	12′	14′	16′	18′	20′			
	18″	40″	60″	7′	9′	10′	12′	14′	16′	18′	20′		
	25″	40″	50″	60″	7′	8′	9′	10′	12′	12′	16′	18′	20′

Table 5–6. Opaque Projector (10-inch by 10-inch Aperture) Lenses and Their Relationship to Screen Size at Given Projection Distances

(Courtesy of Radiant Mfg. Corp.)

Lens Focal Length		*Square Screen Size*				
		50″	60″	70″	84″	8′
18″	Projection Distance	9′	10′	12′	13′	16′
20″		10′	12′	13′	16′	17′
22″		11′	13′	15′	17′	19′
26″		13′	15′	17′	20′	23′

Table 5–7. Overhead Projector Apertures and Their Relationship to Screen Size at Given Projection Distances

(Courtesy of Radiant Mfg. Corp.)

Aperture Size		*Square Screen Size*				
		50″	60″	70″	84″	8′
7″	Projection Distance	7′	9½′	12′	15′	17′
9″		6½′	9′	10′	12′	15′
10″		6′	7½′	9′	11′	12′

design so that it requires special measures to be taken for arrangement, the following are recommended:

a. Placement of a 6-foot square, glass beaded screen on the front wall, dead center, of the normal longer-than-wide classroom.
b. Desks, whenever possible, to be of the flat-top, individual, table-type with separate seats.
c. Seats and desks to be arranged for projection, with center aisle (unless a 42-inch high, over-the-head projection stand is available); no viewer to be positioned farther from the front-wall screen than six times the projected picture width; no observer to be positioned closer to the screen than two times the picture width (sometimes the recommended proximity limit in the case of glass-beaded screens is 2.5 times the picture width because the brightness falls off so rapidly when close-to-screen viewers are located away from the projection axis, and because the beaded texture may be annoying if observed by people sitting as close as 6 feet).
d. Screen to be so placed that the bottom does not drop below the viewer's eye level when the top portion of the screen area is in use.
e. Appropriate screen mountings to be employed instead of the customary map rails usually attached at the top of the chalkboard (map rails although used often as screen mounts are totally inadequate and are not recommended for this purpose).
f. Viewers should not sit farther to the sides than the limits of the desirable observation angles permitted by the screen.
g. When using a sound motion picture, the speaker should be placed at ear height on a table or stand at the side of the screen.

Classroom Ventilation, Bulletin Boards, Chalkboards, Acoustics, and the Central Sound System. Architects must be restricted, as has already been stated, in their placement of ventilating ducts, so as not to interfere with the mounting of projection screens within the 7-foot by 7-foot central area of the front wall above the chalkboard tray. Ventilating ducts should also be placed so that wall display areas and chalkboards may be arranged appropriately at eye level. All who are concerned with effective instruction must call for the best decision possible regarding the ventilation problem in each classroom. Whether the gravity system or some form of a quietly operating mechanical system is finally recommended for installation, its adequacy must be emphasized during periods when drapes or other light-control devices are closed for projection. It should be remembered that in the case of special projection rooms, the ventilation problem may be entirely different than that of a regular classroom where, perhaps, the room will have drapes closed for much shorter periods of time. There seems to be agreement that a good standard for air exchange is 15 cubic feet of air per minute for each pupil, with proper room temperatures and humidity being maintained continuously. Wherever drape systems are used in connection with window ventilating systems, they should be hung from the ceiling approximately 18 inches from the window to permit at least a limited flow of incoming air.

Bulletin boards and all display areas need to be provided in ample quantity also, and while there is no single standard except the specific demands of proposed instructional activities, the architect and the director of audio-visual services should be concerned with providing well-lighted, uncluttered wall spaces for display activities. Adequate map rails are available that provide devices for mounting charts and hanging cloth-display sections, and these should be recommended for use with chalkboards as a minimum installation. To provide for future increases in display activities, many curriculum workers and classroom design specialists indicate that the use of up to a third of the free eye-level wall space is justified for display purposes. A recent trend is to provide for flexibility of display areas by using pegboards, variable area chalkboards, demountable sections of pegboard, tackboard, or chalkboard. Display areas should be located at a convenient height for the pupils to use them. Related to classroom display is the additional need for corridor display cases and hallway bulletin boards.

Every classroom needs chalkboard space, and for special purposes the use of fluorescent chalks in darkened rooms should be made possible by blacklight[9] lamps mounted in a metallic reflector trough over a central section of the chalkboard. At least 20 feet or more of modern, light-colored chalkboard are needed in every classroom, and authorities recommend that the outmoded black chalkboards be replaced.

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[9] Blacklight Corporation of America, 5114 Walnut Grove Ave., San Gabriel, California; and General Electric Company, Lamp Division, Nela Park, Cleveland, Ohio.

In the effort to improve general learning conditions, and to improve the intelligibility of reproduced sound, consideration ought to be given to acoustic treatment. At least the ceilings should be acoustically treated to subdue the noise of regular classroom activities, which in the modern program include multi-group action. Acoustic planning of the entire building is important also to control the transmission of noise; for example, from corridor to classrooms, and from gymnasiums and band rehearsal rooms to other nearby learning areas.

The audio-visual director is often called upon by school-building committees to give counsel regarding a central sound system. Such advice needs to be based upon careful thinking about the uses that are proposed for the system. Central sound systems, while including tape and record-playing equipment, should not in any way prevent the purchase and use of other tape and record-playing equipment to be handled in the classroom by pupils and teachers. Also, it should be remembered that not all communications from a central office will be directed to the student body. Hence, first and foremost, a telephone system should be provided separately or in combination with a central sound system. While no standard set of specifications can be suitable for all schools, the following list is intended as an example of a recommendation prepared by a director of audio-visual services, it being further intended that local conditions, needs and decisions will demand modifications:

Manufacturer: (____________________)
Model: (____________________)

1. Single channel model with an additional intercom channel built in as standard equipment
2. Central console for 45 rooms: (Model ________________)

Features to Be Incorporated:

1. 30-watt program amplifier (minimum)
2. Annunciator indication of room calling the console
3. Three low-impedance microphone inputs at console
4. Input and output for tape recorder
5. Remote telephone line input

6. Room pickup for transmission throughout the sound system
7. High fidelity AM-FM tuner
8. Dual speed tape recorder (Model ________________) to be substituted for record player in console
9. Classroom privacy feature (two-position selector switch) to be installed in each room
10. Telephone handsets as an additional feature of the central sound system, to be installed in each room where a speaker has been located.

Consideration of the functions to be served by school-building communication systems may lead to economy through combination of wiring systems in a single conduit. Kilbride,[10] writing in *School Planning*, points out that:

> . . . with proper advance planning, it is now possible to include in a single set of conduits or raceway, the necessary wiring and basic provisions for six complete systems. . . . Secondary emergency alarm with voice communication for instructions and panic control. . . . The modern system also includes fire sensing and detection circuits. . . . Program clock systems with a master clock and secondary clocks in the various rooms and an audible signal to indicate class-break intervals. . . . Central sound and program distribution systems, often including an intercom for two-way communications. . . . Automatic telephone system. . . . Television distribution to the classrooms of "off-the-air" pick-ups from commercial or educational TV stations, and for internal distribution of live demonstrations or audio-visual teaching aids from the school's own studio. . . . School-to-home equipment.

The director needs to take a long look to the future, especially in planning communication facilities for new school plants.

Long-Term Planning of Classroom Facilities for Old School Plants. Even if all new school buildings include such facilities as those described, the director will have a tremendous task to equip older school buildings that will continue to be in service for a quarter-century or more. The following changes should be set up as a minimum for every school in the system:

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[10] Robert E. Kilbride, "Six Communication Systems in a Single Installation," *School Planning*, Vol. 2, No. 5, October-November, 1957, pp. 4–11.

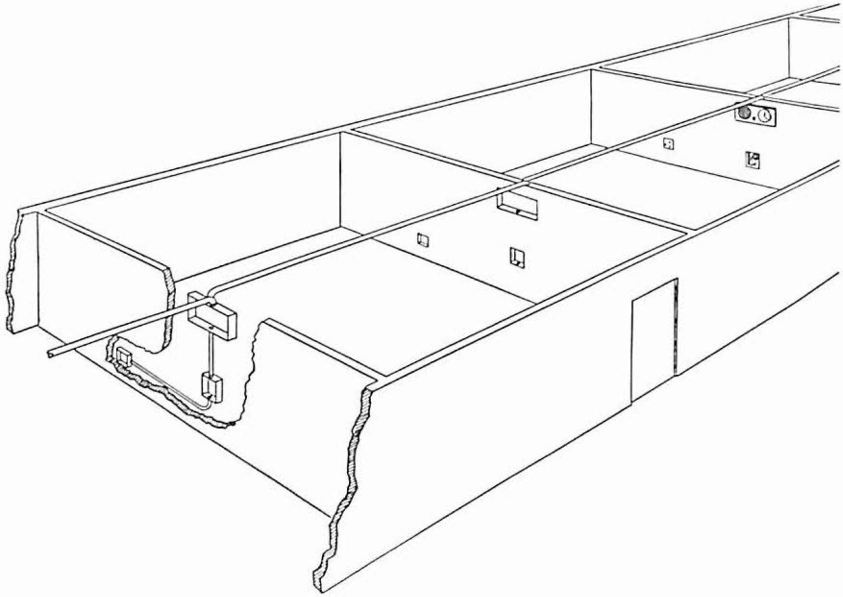

Fig. 5–25. **This diagram shows the single raceway plan for six communication systems. What modifications in this layout ought to be suggested for proper projection-screen placement? For convenient use of projection equipment? (*Courtesy* School Planning Magazine, *Chicago.*)**

1. By using wire-mold connections to present light switches, or to nearest "live" circuits, provide double electrical outlets on front and rear walls, or on rear walls first.

2. Install wall-mount projection screens of appropriate size, using portable screens as a stop-gap only.

3. Install light-control systems of a suitable type, depending upon sun exposure and type of window in each classroom, and use projection rooms and portable shades as makeshifts while the new-facilities goal is being reached.

4. Add new electric circuits and electrical distribution boxes to supply sufficient amperage for each classroom to eliminate fuse-blowing inconveniences.

5. Work to obtain assignment of a classroom in each building of fifteen or twenty rooms as an audio-visual service center, and build a service system as previously described.

6. Add bulletin boards and improve present chalkboards, or replace outmoded units according to need.

7. Wherever possible, add a three-way, on-off switch at the rear of each room.

Long-term planning, and a campaign for adequate financial support for this program, will produce maximum results. This problem of adapting old buildings must be solved, and top school administrators are the only ones who can initiate proper action to accomplish this vital task. The director, however, must provide the facts and the recommendations. Then, working with and through school principals, colleagues, teachers and PTA councils, he needs to help build adequate support for the superintendent's public proposals and requests. These matters will be dealt with again in later chapters on financing the program and on building public understanding and support.

Facilities for Audio-Visual Methods in Other School Learning Areas. In addition to classrooms a number of other learning areas in the school ought to be equipped for the efficient use of audio-visual materials. These areas are the auditorium, gymnasium, cafeteria, and library; and each needs to be considered in the light of its own program of activity.

In connection with the school auditorium the following provisions need to be made:

1. *Projection Booth or Niche.* For small auditoriums seating three hundred or less, an elevated projection niche is recommended, but for larger auditoriums a projection booth is desirable. However, regardless of which is needed, the following items ought to be specified: (a) switches for control of auditorium lights, for control of motorized screen, for control of motorized stage curtain; (b) stage-to-booth buzzer signals; and (c) heavy-duty electric current outlets on separate 30-ampere lines. In cases where niches are built, the equipment must be raised up for over-the-head projection to the screen by means of a platform, or the niche itself should be elevated. The niche should be at least 10 feet long and 6 feet deep to permit convenient operation of several projectors in one program. When projection booths are incorporated in the auditorium plan, the booth should be designed with an adequate number of soundproof apertures for projection and observation, with special exhaust fans for arc projectors, with regular ventilation devices, with sound-monitoring loudspeaker

and sound controls for the public address system, and with provisions for feeding sound from tape or disks into the auditorium's sound-amplification system. Projection booths should also provide film re-wind and workbench space.

2. *Projection Equipment for the Auditorium.* In small auditoriums regular sound motion picture projectors and a combination slide projector with interchangeable condenser chests and objective lenses for standard and miniature slides are recommended. However, for wide-screen presentations the extra illumination of heavy-duty projectors such as arc projectors or Joint-Army-Navy (JAN, Bell and Howell Co.) incandescent-lamp projectors is desirable.

3. *Projection Screens for the Auditorium.* What has been said before about projection screens and placement of viewers applies as well to the auditorium; however, in the case of very large auditoriums the immense screen size called for is impractical because the high illumination demanded is unavailable with the usual 16-mm. projectors. CinemaScope screens need not be curved if the throw is in excess of 50 feet. This permits using a motorized roll-up type of screen thus saving a great deal of stage "sky" space. Large lace and grommet screens cannot be easily taken down once installed, and hence stage activities are permanently restricted. Roll-up models of wide screens are made at present in 8-foot by 20-foot sizes but no larger, and it may be necessary to use the larger permanently installed frame-type screens if the auditorium needs a vertical picture larger than 8 feet. However, the school is not in competition with the theater down the street, and for school auditorium purposes the square screen is still the most practical. The proposed auditorium program should be studied by school personnel, and its equipment should be purchased accordingly. School materials presently available do not demand wide-screen provisions, but the future may change this. It should also be remembered that if loudspeakers are to be located behind the screen, the screen must be of the perforated type.

4. *Auditorium Wiring Provisions.* The flexibility of auditorium facilities will be increased if heavy-duty electrical outlets are placed near the front of the auditorium for setting up opaque and overhead projectors near the stage. Such lines should have separate fuses so as not to interfere with lighting and other power needs. Microphone lines and amplifier to loudspeaker lines must not be mixed with power

supply lines; hence ample conduits need to be provided. Television outlets need also to be provided; hence conduits need to be included that connect master antenna and the closed-circuit originating studio in the building (if one is included). In large auditoriums an outlet for large-screen TV projection is a necessity.

5. *Light Control and Lighting.* What has been said earlier about these topics applies as well to the auditorium.

6. *Sound Engineering.* No audio-visual service director, unless he is an acoustic design expert, should undertake to recommend the pattern of loudspeakers and to make other critical decisions about design. Acoustical treatment, the decision to employ either high-level single-source or low-level multiple-source sound systems, and the appropriate location of loudspeakers are matters for experts in this engineering field to study and decide upon.

The Gymnasium. The Gymnasium is another important learning-activity space that too often goes unnoticed when specifying provisions to facilitate audio-visual methods. Gymnasiums need conveniently located electric-power outlets to supply projectors and record players for instructional and community events. The placement of such electrical outlets will be determined by the shape and size of the activity space; however, power outlets near the center of the floor as well as at sides of the room are important. The urgent need for public address systems in large, single, or split gymnasium facilities should be provided for by locating microphone inputs at positions where band leaders, coaches, or instructors are more likely to have to stand. Hence ¾-inch conduits should be specified as necessary. Light-control systems, as previously discussed, should also be considered and recommended. Appropriate sections of the gymnasium should be arranged for projection activities, and screens of suitable size should be painted on the wall,[11] or portable screens should be provided. Wall-mounted screens may interfere with activities, and they are almost certain to suffer damage.

School Libraries and Cafeterias. These spaces are also serviceable for a wide variety of learning activities and for large-group viewing of television programs. They also provide convenient spaces for rehearsals, special group meetings, club activities, and community meetings that call for audio-visual communication media. Hence, provision for television outlets, screens, light-control systems, electrical outlets, and acoustic treatment will extend their usefulness in significant ways beyond the purposes traditionally recognized. Local conditions and plans for these spaces should thus be looked at in the light of other curriculum uses, and especially, insofar as the director is concerned, in the light of possible audio-visual methods.

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[11] Write to the W. J. Ruscoe Company, 483 Kenmore Blvd., Akron, Ohio. This company sells Perma-Brite drive-in screen paint with excellent reflecting characteristics. Good quality, flat, white paint will also give satisfactory projection results, but it is unsuitable for outdoor applications of this type.

In this chapter the director of audio-visual services has been depicted as the facilitator. In this role he is the audio-visual specialist, prescribing and offering advice to prevent errors that will cripple the use of audio-visual materials in the years to come. He encourages all concerned to plan the best new construction possible for effective learning including the wide range of audio-visual learning experiences in which he is especially interested. But at the same time he must find ways to *adapt* old buildings to modern-day instructional practices. In Chapter Six the prospective director is guided in setting up the headquarters suite. In the audio-visual center the processes and procedures that maintain the equilibrium of service functions are organized and administered. The efficient operation of such a service center, and the system-wide organization it implies is another main function of the director, the function of the executive.

SUGGESTED ACTIVITIES

1. Just how do you strike a balance between creating and meeting demands for audio-visual service? In this regard, what is the danger of overselling, or over commitment?

2. What are the basic reasons why materials ought to be classified, listed, correlated with instructional units, and properly publicized?

* 3. Examine several catalogs or sourcebooks, and note the categories or main headings for classification purposes. What are some weaknesses and strengths in these categories as far as busy teachers are concerned? What are some basic attributes of a classification system you would devise for teachers if you were making a catalog?

4. How do you find out if any catalog system you desire to use is going to work?

5. Do you believe individual card systems for information purposes are better than up-to-date mimeo or printed lists? Why, or why not?

6. How do you go about striking a balance between the purchase of extra prints of popular titles and the purchase of new subjects?

* 7. How can the preparation of specific lists of audio-visual materials be tied in with the in-service growth program in audio-visual materials? Make a plan for involving teachers in a publicizing system such as that described in this chapter.

8. Assume you have set up a color-coded card file of audio-visual materials. How would you circumvent the difficulty color-blind teachers would have with your system?

* 9. Examine several picture stories or verbal accounts of operating procedures in city-wide audio-visual service systems, and note the forms used by teachers for ordering materials, for reserving rooms and equipment, and the forms used by the director for saving time and effort. Make a list of the forms you feel are absolutely essential for your own school system.

10. Would the Seattle ordering and scheduling system work in your school system? If not, why not?

11. What system for distribution of A-V materials and equipment would you recommend for your own school system? How often would you deliver? How long would you allow teachers to keep materials borrowed from the service center?

* 12. Formulate a plan for providing system-wide equipment facilities. Show how you will strive to make use of both centralization and decentralization in assigning equipment units.

13. Sketch out in outline form a training program for fifth- and sixth-graders in a new audio-visual crew. Develop an apprentice system for this training, and show how the training sessions become progressively difficult, based on previous learning.

14. Show how equipment manuals could be prepared for both student operators and teachers using the same materials. What different materials need to be included for teachers?

* 15. Assume you have been assigned a normal size, 30-foot by 26-foot classroom, in each of ten elementary schools, for remodeling as a school audio-visual service center. Make a scale drawing of your planned layout. Label your diagram fully as to utilization of the space to facilitate audio-visual services in the building.

16. Some teachers refuse to exchange classrooms with other teachers to share darkening facilities. Do you blame them? Is the central projection room the most desirable way to provide facilities for projecting pictorial materials? Defend the negative view by giving at least three good reasons for your opinion. What are the arguments in favor of the projection-room method?

17. Make a collection of the literature distributed by producers of darkening systems; then formulate a policy regarding darkening installations in terms of a preference list of methods for the following types of windows: (a) regular windows (usually in old buildings) of approximately 3 feet wide by 7 feet high; (b) short-in-height windows located high on a wall, approximately 3 feet high by 8 feet wide, recessed without casings; (c) a window wall 8 feet high by 30 feet wide; (d) a window 8 feet square, recessed; (e) a window 5 feet wide and 7 feet high, recessed; and (f) an auditorium window 20 feet high and 4 feet wide with a semicircular-shaped top section.

18. Your own superintendent of schools has written you asking that you participate in a conference with the architect working on plans for several new schools in your community. You have been asked to prepare a letter, addressed to the superintendent, stating the crucial architectural considerations for audio-visual methods for the proposed new high school building (1,000 students), and for each of two new elementary schools (800 students).

19. How can the *size of screen* needed for a given classroom be determined? Are there special cases when the generally accepted method for determining this will not be applicable? Explain.

20. Write out a list of facts as they apply to: (a) types of screens to purchase; (b) viewing and reflecting characteristics; (c) mounting procedures; and (d) rules regarding placement of viewers, projectors, and screens.

21. Explain how the following factors are related to the size of a projected picture: (a) distance of projector from screen, (b) focal length of lens, (c) area of projected material, and (d) the intensity of illumination.

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CHAPTER SIX

THE AUDIO-VISUAL CENTER

In previous chapters the discussion of centralization and decentralization, of facilitating the use of audio-visual material, of proper control and distribution, of school-building service suites, and of leadership in setting up programs of service, has implied the existence of a central service headquarters. Throughout the country some of these centers are housed in shacks, and others are in palaces; some are in old school buildings, and some are in new. An audio-visual center, however, is also a symbol of external action being taken, and it is the scope and quality of that action which really matters. The audio-visual service center ought to be thought of as a vital "pumping station" with "pipelines" of service running to each classroom; and so, in addition to being a suite of offices in which the indispensable functions of storage, maintenance, distribution, and control are carried on, it is also in a very real sense a system-wide organization.

In setting up an audio-visual center, the director must blend professional, clerical, and technical services, and must therefore bring to his job a thorough understanding of appropriate physical arrangements, of adequate technical control of materials and equipment, and of adequate inventory controls, and must possess the ability to build an effective staff organization. Therefore the purpose of this chapter is to aid the prospective director in making wise decisions and recommendations when setting up these processes and procedures.

SPACE NEEDS AND LAYOUT OF THE CENTER

In the preceding chapter, space needs for an audio-visual service center in each school building were described in connection with a system for giving needed assistance to teachers. Space needs for the audio-visual service center for an entire school system may well be of the same type but larger, the size of the spaces required depending upon the scope and quality of the service program in operation. (See Fig. 6–1.) In the light of known operations and desirable services to meet instructional needs, the following comprehensive list of space needs is suggested as a basis for local planning and reference:

1. Reception and display area
2. Administrative and clerical offices
3. Storage of materials space
4. Storage of equipment space
5. Shipping, receiving, inspection of materials, and work space
6. Loading and pickup space
7. Equipment inspection and maintenance space
8. Cart garage space
9. Professional library and committee study space
10. Blind storage space
11. Rest rooms
12. Preview and pre-auditioning space
13. Graphic production space
14. Recording studio and control room
15. Photographic laboratory and workroom
16. School-system FM radio station space
17. Closed-circuit, or low-power radiation, system-wide, television studio, control room, and storage space

If it is desirable to change the emphasis from audio-visual materials to one of instructional materials, the following three space needs should be added to the preceding seventeen items: (a) a storage and processing space for textbooks and reference books,

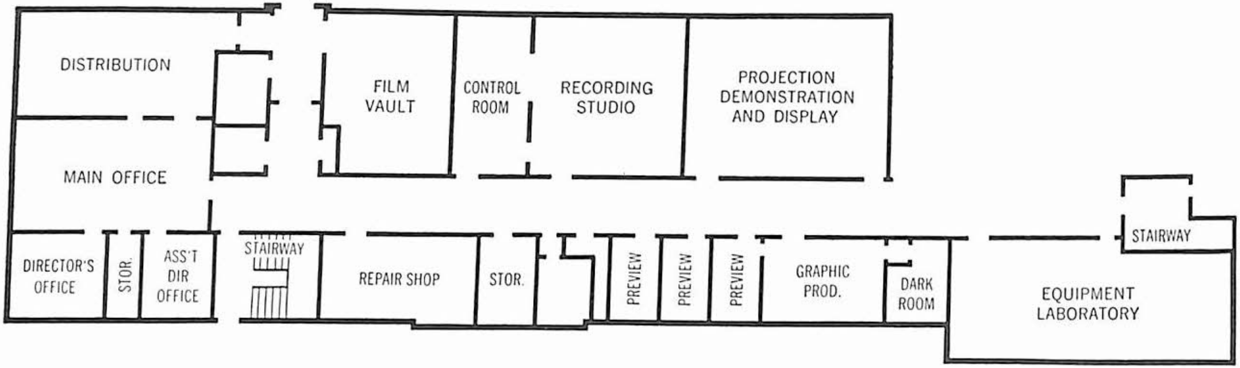
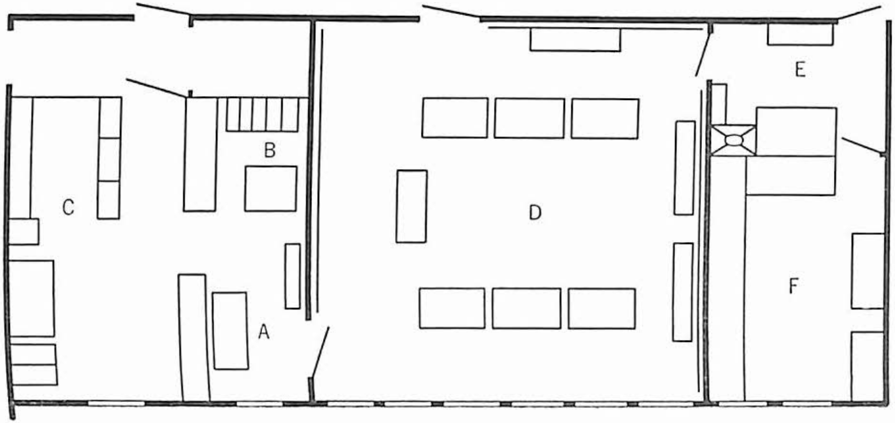


Fig. 6–1. **Above is the space layout for the University of Connecticut A-V Center. Identify strengths and weaknesses. What changes should be recommended to adapt equal space for city public school-systems?** ***(Courtesy Frederic C. Teich Architect, Hartford.)*** **At right is a city-wide A-V service center. (A) and (B) are office areas, (C) is the distribution area, (D) is the meeting-display room, (E) is the film inspection and mimeographing room, and (F) is the equipment service and storage space.** ***(Courtesy Kalamazoo, Mich., Public Schools.)***



(b) a publication production center coupled with a curriculum laboratory area, and (c) a storage and processing space for school supplies.

As often is the case in smaller cities, a particularly large service center area in a school building becomes the system-wide service headquarters as well. In such a headquarters, it is essential that a cart storage area be so arranged that it has direct access to a corridor. Moreover, an area for cart storage is needed on each floor for facilitating the flow of equipment on schedule with a minimum amount of time having to be spent by student operators.

In subsequent paragraphs the layout of centers will be discussed in terms of functional groupings of space needs, as previously listed. However, since desirable production and broadcasting facilities will be discussed more fully in Chapter Eight, emphasis will be placed upon the more commonly known facilities that will doubtless have highest priority in starting a service program. Possible future expansion should, of course, be borne in mind when planning current operations.

Layout of Office Space and Reception Area. These areas obviously need to be together so that a member of the office staff can efficiently receive and route visitors to proper people and places as a part of regular secretarial and clerical duties. Sometimes the reception area has to be too small to include display and browsing areas, and in these cases interesting displays at or near entrances ought to be arranged as, for example, in corridors adjacent to the office. A few brief possibilities and adjustments in layout of these facilities follow:

1. The director's office should be close to the center of operations, not on another floor or at the end of a corridor away form his staff operations. If possible, his office should provide for privacy, but if necessary he may find a quiet corner in the main office or in the central work rooms if office, storage, and workroom is a large block of space. In metropolitan centers where there are a number of department heads, the director needs a private administrative suite. Sometimes the director is separated from the center of operations by being located in another building provided for supervisory staff members. In general this is not recommended, but such arrangements will

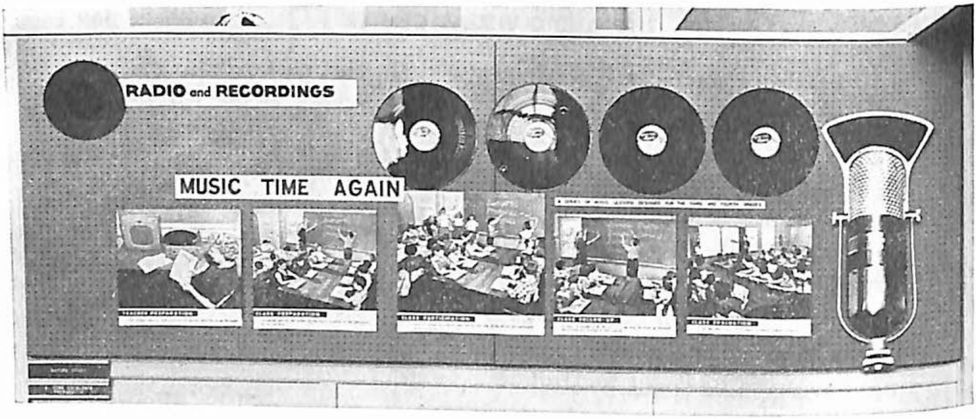


Fig. 6–2. Striking displays capture the attention of teachers who call at this A-V center. (Courtesy Los Angeles City Schools.)

work if a competent manager for the clerical and technical services is located at the central distribution unit.

2. Where adequate space is unavailable, space priority should be given to working areas, cutting the space allotments for reception and the director's office to an operational minimum. In such cases, it is better to combine all functions in one operating area without partitions.

3. Reception areas ought to have a reading table for catalogs and handbooks, and this area may also be arranged to serve as a room for committee meetings.

4. The director's office space should be arranged as a part of the professional library and committee study area whenever the reception area is extremely small; for example, 35 square feet or less.

5. If other places are available for waiting and browsing, it will be better for the sake of control to have the reception area attractively fenced off, with a gate leading to other offices and operating spaces. Directing individuals to recording, consultation, and study activities on schedule is obviously an important function, since confusion and embarrassment are otherwise unavoidable.

6. In large centers, various divisions such as photographic production and broadcasting would of necessity have to maintain their own reception and administrative offices.

Layout of Storage and Distribution Spaces. In this section suggestions will be made regarding methods of storage for each type of audio-visual material and the use of available space for the following operations: handling the work of filling orders; inspecting materials; packaging; returning used materials to storage; loading and unloading; and issuing equipment and materials. Sometimes it is necessary to issue equipment to users in the same school building where the center is located, and when this is the case, it is essential to provide a convenient, mobile, projection-stand storage area with easy access to a corridor, as has been already pointed out. The main considerations in the arrangement of allotted spaces are the efficient use of staff services, and the protection of capital investments in materials and equipment by adequate provisions for their storage, care, and handling. The prospective director must be prepared to adjust this entire operation to local conditions by either improving an existing operation in an old or recently remodeled building or, as opportunity presents itself, by planning a modern center in new construction. Without being pessimistic, he should be prepared to make the most of what space he can get, since actual allotments will rarely be as much as he needs or requests. Basic directions and suggestions for space planning are:

1. In planning space needs for the storage and handling of materials, the director ought to look ahead ten years in order to provide for the type of program realistically envisioned as developing during that period.

2. The director needs to arrange operations within spaces allotted in terms of a natural flow of work to economize on the time and effort of personnel. The only profitable way to attack this problem is to construct a diagram showing the relationships between the essential processes that must be carried on. The first diagram that ought to be made is the process of receiving materials, and it must include the following flow of activity, beginning with the rear-door loading zone or the front-door parking area: (a) materials are carried or wheeled to a receiving bench in the center's work area where packages are opened and the materials are placed on a mobile table or rack; (b) return slips are checked off against original delivery records; (c) materials are wheeled to inspection benches for cleaning and repair, and after such processing they are (d) wheeled to storage vaults, shelves, or racks, and properly filed for subsequent requests.

Another natural flow pattern is the process of filling orders. This flow-of-work diagram is as follows: (a) materials such as a film, chart, filmstrip, or exhibit are pulled from storage racks or cabinets and placed on a mobile table; then (b) they are wheeled to shipping benches where they are packaged and labeled; then (c) they are placed in canvas delivery bags or in boxes marked with the name of the school awaiting delivery; and finally (d) such materials are moved to the loading platform on scheduled delivery days. It can be seen that efficient flow-of-work patterns should be planned out in great detail before specifications are stated for amount and shape of spaces being requested.

3. Arrangements for adequate light and ventilation need to be made for proper inspection and cleaning of materials because matching picture frames and sound tracks of motion pictures require accurate observation of small details, and of course some cleaning fluids have annoying odors even if they are not actually toxic.

4. It is urgent also that film materials be kept at normal humidity and temperature conditions; hence a separate room is advised where humidifiers may be operated to keep air from getting too dry, as for instance, in overheated rooms in winter. Brittleness of film materials must be avoided. Such vaults according to suggestions in (2) should be conveniently located with respect to inspection and packaging benches. Doors into film vaults ought to be wider than usual to permit mobile film racks and tables to pass with ample room to spare. A sliding door would be best for space economy.

5. Equipment storage spaces need to be near loading and issuing areas. Such storage areas could be in the repair shop, but generally the shop should be free of this storage function. Equipment storage area ought to be located as close as is feasible to the individuals who inspect it, that is, to those who will check its readiness for the next use. Whenever equipment is stored during damp summer months, ventilation in the spaces is needed, or silica gel must be provided to remove excess moisture from the air. When these precautions are not taken, mildew is likely to damage cases and electrical insulation.

6. Loading and unloading zones need to be on ground floors with access to loading ramps, and since trucking carts ought to be available for hauling packages, floors and floor coverings need to be able to stand up under hard usage.

7. While other than ground-floor locations for storage and distribution functions are commonly found, they should never be specified unless private freight elevators are available. If necessary, the prospective director should compute the tonnage of materials handled annually, adding both incoming and outgoing materials, to win his case if there should be conflicting requests for such ground-floor spaces.

8. Optimum working space should be provided around the packaging bench, and ample space should be provided around the film-inspecting benches for mobile film racks or tables. The packaging bench ought to be a comfortable height for workers; such benches should be constructed to provide underneath storage space, and should be of such size that they can serve as table tops for numerous construction activities if other workbench space for these purposes is unavailable. A width of 24 to 30 inches, length of 7 to 12 feet, and height of 38 inches for stand-up work may prove to be desirable general measurements for the combination packaging and work bench.

Layout of Equipment-Inspection and Maintenance Space. In general, college and university and metropolitan audio-visual centers maintain the largest and most well-equipped equipment maintenance shops; however, many small- and medium-sized cities provide school shop facilities for inspection, cleaning, and minor service work. A few centers have been fortunate in discovering a technical person who repairs materials and equipment, and who serves as a photographer or in some other capacity besides. Again, the emphasis in this section is upon the spatial arrangement of the shop and not procedures and equipment, since these will be treated later in the chapter. It should be remembered that in the preceding chapter, shop facilities were recommended as a part of the school-building service center, and the reader should recheck the recommendations and illustrations given there. Therefore, the following suggestions and directions apply to the layout of shop facilities in the school-system audio-visual center, where facilities need to be more complete and the space allotment greater.

1. Since the job of issuing and controlling materials and equipment is not a shop function, although in small audio-visual centers these functions may have to be combined, the various units of equipment ought to be stored elsewhere. However, the repair shop ought

to be located near the equipment-receiving area to save work of wheeling or carrying it to the shop when it is found to be defective. Actually, if the shop is near the receiving area, all work of inspection in addition to cleaning and servicing ought to be done in the shop space.

2. If mobile equipment carts are available, and day-to-day inspection of incoming equipment units can be done at an inspection station near the issuing and loading zone, then the shop functions may without undue hardship be assigned to space located at a considerable distance from the distribution center but always on the same floor.

3. The efficient flow pattern ought to be (a) inspection of equipment near receiving point; then (b) to storage for subsequent issue, or (c) to shop for repair; and finally (d) back to storage for immediate assignment. Another flow pattern could be (a) referral to shop from a city school building via receiving room for needed repairs, and (b) return to issuing room for cartage to its original school location via regular delivery channels.

Layout of Professional Library and Committee-Room Space. An audio-visual center must have space to house its professional library, equipment literature, catalogs, curriculum listings for teachers, and the reference materials for the director as well. In smaller centers such space may be part of the director's office, may be in a small consulting office off the main office, or may be an attractive corner of the main office. Actually, such spaces need to be a part of or close to the main office area, since materials on file should be subjected to a control system to assure their usefulness at the time of need. Illustrations will show that some centers have well-developed areas for these purposes, while others have to make the best of a single shelf and a couple of file cabinets.

Layout of Blind Storage Space. The importance of so-called blind or dead storage space is frequently overlooked in planning the layout of operational spaces for audio-visual services. Every center ought to have at least one storage area in the main office and one or more additional storage closets measuring at least 6 feet wide by 8 or 10 feet deep. In new construction, such spaces may serve also as "expansion" space; as for example, additional preview rooms. Such storage areas need not necessarily be located close to operational centers, but they could be located off corridors in such fashion that they would serve to stop undesirable transmission of sound. That is, a preview room or recording studio could be located between such storage rooms, thus protecting that space from noise. Small blind storage rooms make possible an uncluttered appearance in regular storage spaces, since obsolete equipment units or infrequently used materials may be stored safely out of sight. It should be recalled that obsolete equipment units may be used as "trade-ins" on new equipment units; hence the recommendation to store them. If the possibility of deriving trade-in value is remote, outworn equipment should, of course, be discarded. Without such storage areas, rooms in other school buildings ought to be found and utilized.

Layout of Preview and Preauditioning Spaces. If obtaining space is a problem, the allotment for a large-group preview facility should have a low priority. This viewpoint is not heretical at all because many large preview rooms sit idle a large percentage of the school day. Suggestions and directions for allotting such space are:

1. Small preview and pre-auditioning rooms are urgent, and two to four of these rooms, involving approximately 36 square feet each, need to be located where sound emanating from them will not disturb other operations.

2. A large preview room seating thirty to forty people is not necessary at a school-system center unless it can double as an equipment laboratory, as a production center for slides and transparencies and other graphic materials, as a picture-mounting workroom, as a recording studio, or as other operational areas that can be shared by the center and other school agencies.

3. The work of previewing for selection purposes must necessarily go on continuously in every school building in the system, since materials need to be routed to teachers, analyzed, and reported upon in accordance with system-wide plans.

4. A projection room seating ten to fourteen people should have high priority, however, and perhaps one of the small, booth-type projection and sound auditioning facilities recommended in (1) should be expanded into one of these.

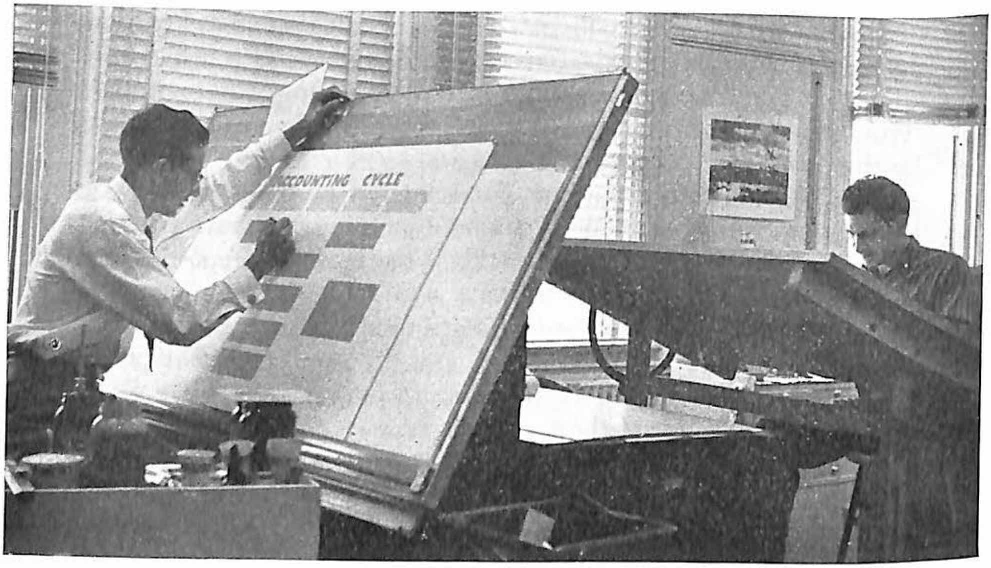
5. All preview rooms need to be located close to equipment and close to center personnel who can operate the equipment and check on fulfillment of schedules and appointments. This means locating

such spaces near office and equipment control areas, at least on the same floor for convenient supervision.

6. When necessary for elimination of noise, listening to audio materials may be done by individuals or small groups using ear phones.

Layout of the Graphic Production Area. The production of such graphic materials as charts, posters, diagrams, illustrations for school publications, transparencies of the diazo-ammonia type, and handmade slides may be conducted more conveniently and effectively when adequate space is allotted and properly equipped for these specialized operations. Such a room for work by one or two individuals at a time can be as small in area as 60 square feet. If such a room has an exhaust fan for removing fumes, diazo-ammonia developing processes can be included. A minimum graphic production area of 240 square feet, housing two large drawing stands, a supply bench, a picture-mounting press, and a few small drawing desks and tables will be needed for the work of a full-time artist. (See Fig. 6–3.)

Fig. 6–3. Artists are at work on instructional materials in this graphic production center. ***(Courtesy Los Angeles City Schools.)***



The location of a small projection room next to such an area for handling diazo-ammonia processing of transparencies and for facilitating opaque projector enlargements will enhance the graphics production arrangement greatly. Even though a full-time or part-time staff member for graphics is unavailable, it is advisable to provide minimum facilities for such work because the director himself will need to prepare special materials at least for his own public and staff relations. In this case one of the small preview rooms ought to be properly equipped and scheduled as needed for his own and the use of other interested individuals. When no space for such production is available at all, the director should attempt to equip one or more art departments in the junior and senior high schools and seek the cooperation of the art teachers in production projects as a temporary measure. Even the work of picture mounting can possibly be accomplished by the cooperation of students and teachers.

Layout of Recording Studio and Control Room. Another operational space need is an area where recording work may be done. Today, with magnetic sound motion picture equipment and with the rapidly advancing field of magnetic tape and its special relationship to telecasting, a recording studio and control room merits careful consideration. Such a room, even if only providing 240 square feet, can be serviceable. An adjoining control room with glass panel and with connector plugs in the partition separating it from the main studio, of 40 square feet minimum, will enable better recording of magnetic sound in connection with motion picture sound tracks. The studio, being acoustically treated, may serve as well to record radio spots and short talks by school officials in connection with school public relations programs. Also the studio may house tape re-recording equipment for preparing copies of disk and tape-recorded materials loaned to the school system for that purpose. The work of re-recording, however, does not demand the acoustic conditions of a studio. The location of studio and control room is a critical matter from the standpoint of external and internal noise. Only by an analysis of local conditions can the decision to include a studio be judged practical or impractical.

The foregoing suggestions have been made in terms of what a basic audio-visual services program should include on a desirable minimum basis. Many programs today, even in cities where good audio-visual leadership has been available, have not yet reached or exceeded this desirable minimum stage. However, as the program of service expands, one of the first areas of expansion will doubtlessly be a photographic production department, and next, such additional departments as radio and television services. Finally, or even before the broadcast facilities are developed, the service program may become an instructional materials program dealing fully with problems of supplying such other curriculum services as textbooks, library reference materials, community resources coordination, and school supplies. Such future points of expansion are treated in Chapter Eight; hence this section on layout of center facilities will not discuss such space needs.

The prospective director should be prepared to make arrangements for convenient storage of a wide variety of audio-visual materials, and of course these materials must be given needed care at the center and also handled properly in transit. Space requirements to do this job effectively have been discussed, but in the subsequent two sections specific procedures and facilities for getting this work accomplished will be described and illustrated.

ADEQUATE STORAGE FACILITIES AT THE CENTER

Planners of audio-visual centers need to understand that the nature of storage facilities is usually determined not only in terms of available space, but also in terms of the way materials are, or ought to be, packaged. It should be recognized without fail that the way materials are packaged has a bearing upon their protection against damage, both in storage and in transit, and upon the convenience with which materials are inspected after use, and the ease with which they are returned to storage and then identified again for order-filling processes. Specific suggestions and illustrations for proper treatment are given here.

Motion Pictures. Open film racks should be purchased or fabricated locally whenever it is expected that a film library will eventually grow to several hundred reels or more in size. Such racks should be so spaced in the film vault that mobile carts may be brought to within an arm's length of the racks. (See Fig. 6–4.) Metal, enclosed cabinets are often used to house small film libraries of a hundred reels

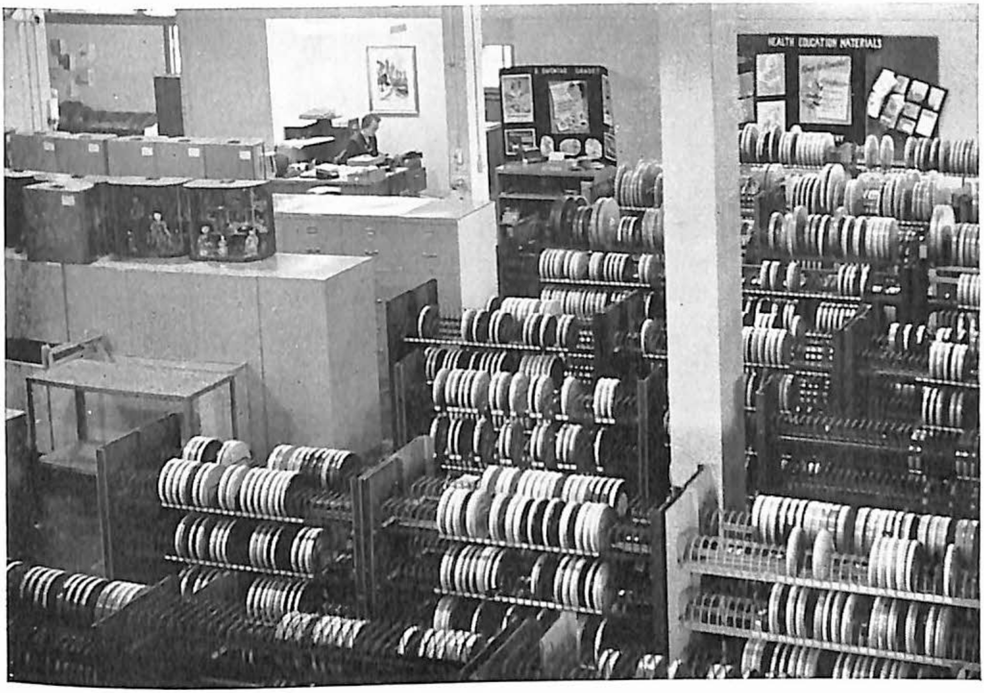


Fig. 6–4. Motion picture storage racks may be purchased commercially or constructed locally. Shown here are standard metal racks. ***(Courtesy Audio-Visual Center, San Diego County Schools.)***

or less, but cabinet doors are often in the way because swinging space must be provided. Care should be taken that the film separators in the racks are wide enough apart to hold film cans, although some libraries discard the film cans and store just the reels. In most cases the 400-foot cans are kept separately in their own racks for convenience in filling orders. Some film libraries keep all sizes stored separately. This is hardly necessary, since all other film cans or reels other than the 400-foot size can be reached and handled easily if stored side by side. Plans for identifying films are many, but in general, cataloging procedures and ordering systems have a bearing on the final decision. Some of the most common systems for locating motion pictures on the racks and identifying them are the following:

1. *Alphabetizing by Title Only.* Write a brief title and the print number on the can, or if no can is used, write the title on the film's

white leader strip with a felt-nib pen. Also type up brief title and print number on small label and fasten this to the film rack to indicate the permanent storage position of a particular film.

2. *Using a Numbering System.* Write a code number for the film title on both leader and can and possibly again on the rack. For example, film numbers could run from one to a thousand with a prefix of MP. Such code numbers would then appear in catalogs, subject listings, and on file cards.

Slides. Slides of all sizes should be stored in their sturdy cardboard or wooden boxes, according to specific unit topics, on ordinary shelves or in cabinets of appropriate size. Commercial slide-storage cabinets that will not allow slides to be stored in unit boxes should not be purchased unless special circumstances prevail. Visible slide files, such as vertical metal frames that allow an instructor to select one slide for his special purposes, have no place in a central depository. Such slide files ought to be in a teacher's room, and the slides in it ought to be assigned on a long-term loan basis. For example, a chemistry teacher needs slides and a projector on a long-term basis for day-by-day use. Identifying code numbers or titles of slide sets should, of course, be in accord with cataloging procedures.

Filmstrips. Many ingenious devices have been devised for storing filmstrips, from the commercially available shallow-drawer cabinets (see Fig. 6–5) to the homemade drawer with separators made of piano wire stretched taut after being threaded through appropriately drilled holes in the drawer frame. Other devices range from hanging wall frames to ordinary shelving where filmstrips are stored in cardboard boxes. Many filmstrip libraries are now storing filmstrips in small sets and are distributing them accordingly. Also the new plastic filmstrip container with unlosable cover is a popular development. A number of libraries dislike filmstrip drawers because of the packaging problem, preferring to inspect and return filmstrip cans to a cardboard package, and to store the package on a marked shelf ready for delivery, thus avoiding location of a suitable carton or cardboard tube every time an order is filled. Coding with catalog numbers or other suitable identifying numbers should be affixed to both can and shipping package. Sound filmstrips with their accompanying records need extra coding numbers to indicate disks or tapes that must be packaged separately or in combination. Large fiber cases for records are recommended.

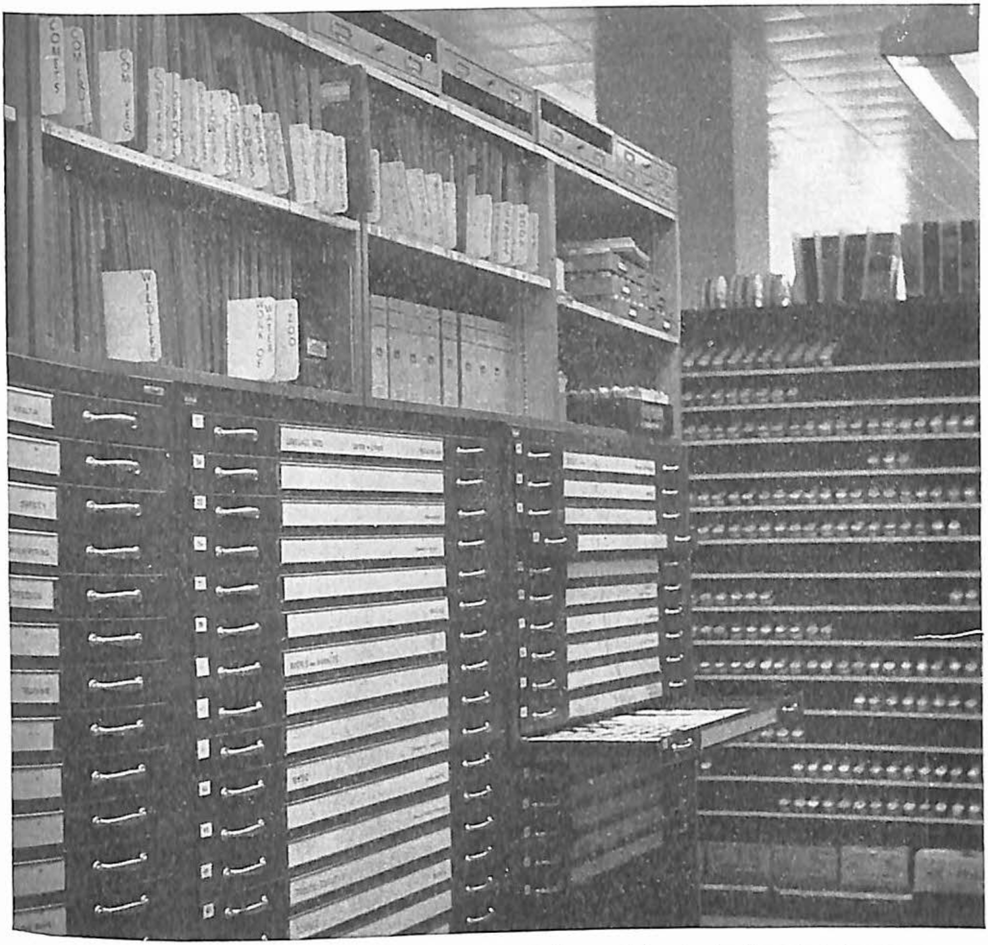


Fig. 6–5. **This extensive filmstrip library is housed in stacked metal drawers and on slanted shelving.** ***(Courtesy Audio-Visual Center, Fresno County Schools.)***

Study Prints. Pictures distributed by a center ought to be stored in sets, with the possible exception of large-size art prints. Legal-size filing cabinets or appropriately sized shelves are needed to house the sets, and additional protection must be given by specially fabricated cardboard boxes or by accordion-type folders with tie strings. Tying a set of pictures together and storing them in cabinets with exposed edges and surfaces is not recommended. Paper-box companies will turn out boxes according to local designs and measure-

Fg. 6–6. In this case bins of suitable size are used to store study-print sets. Sturdy boxes were made up especially for these sets. ***(Courtesy Audio-Visual Center, Fresno County Schools.)***

ments, using sturdy clasps, hooks or other cover fastening devices. Mounting procedures are discussed in a later section on care of materials; however, mounting according to standard sizes of mounting-board material will be a help in standardizing the sizes of transit boxes needed. When individual pictures are distributed, sturdy covers and clasps are necessary for protection. Figures 6–6, 6–7, and 6–8 point out desirable procedures.

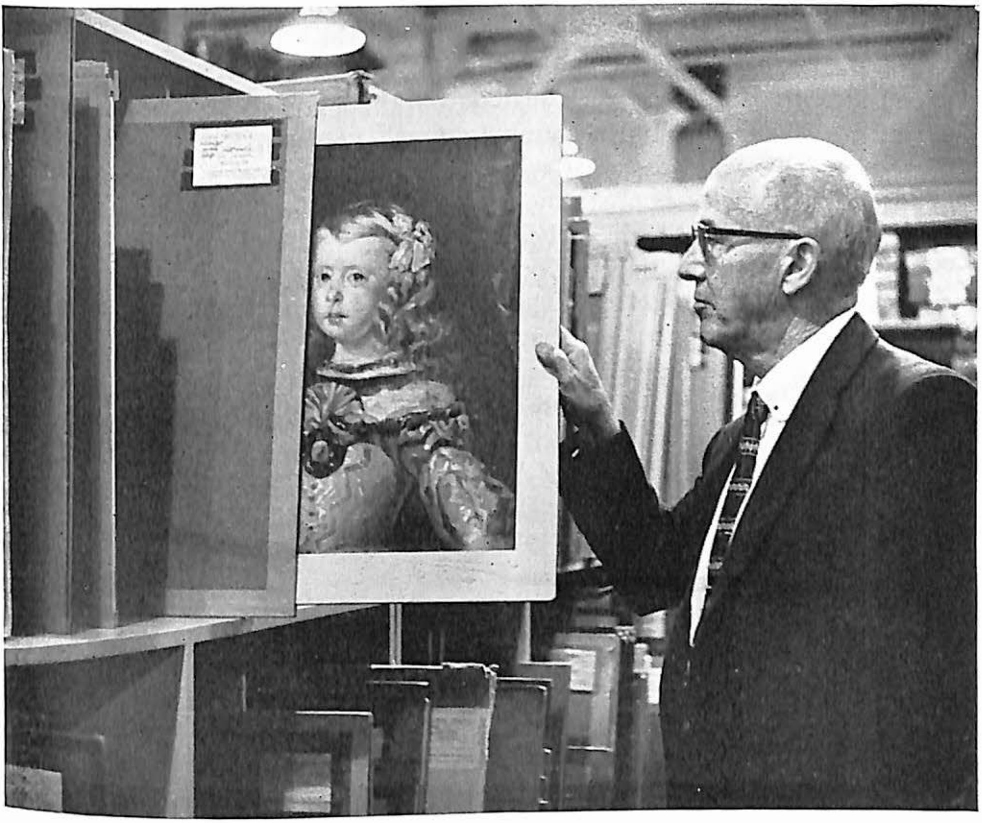


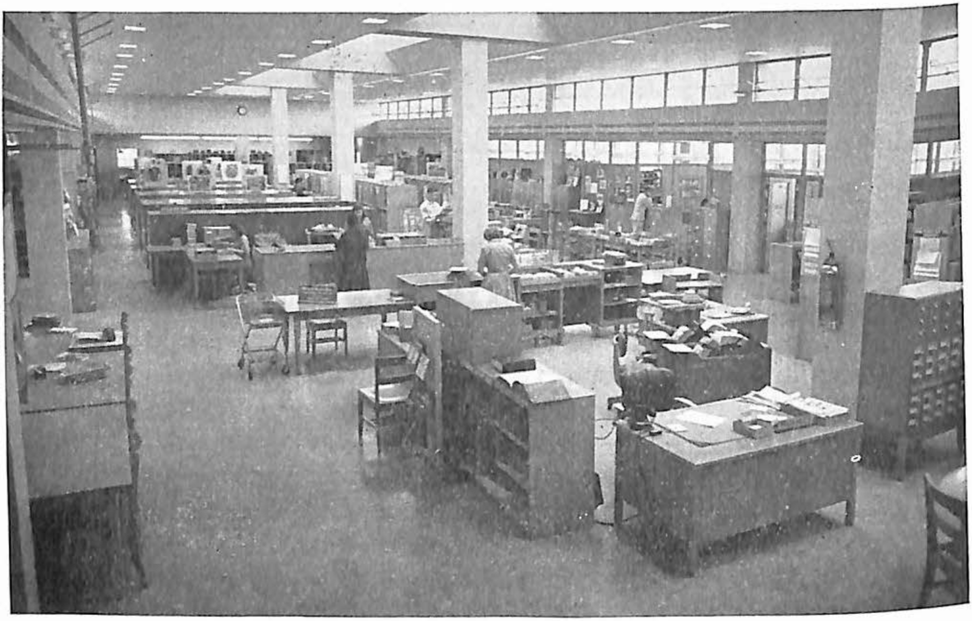
Fig. 6–7.* Large study prints need proper storage, adequate protection, and appropriate means for rapid identification. *(Courtesy Audio-Visual Center, San Diego County Schools.)

Disk and Tape Recordings. Vertical storage cabinets or shelving are easy to fabricate locally, or they may be purchased. Heavy-duty record sleeves ought to be procured in quantity and used to give records adequate protection. Transit containers may be of the fiber-film-case type with cardboard fillers to prevent sliding of the record during periods of transportation. Small-size film-shipping cases may also be used for reels of tape. If space permits, disks and tapes may be stored vertically in their shipping containers, thus providing more room for appropriate code numbers or appropriate labels. If stored as individual disks in original covers, protruding adhesive cloth tabs may be used for identifying numbers.

Realia, Exhibits, Kits, Models, and Dioramas. No center should consider distribution of such materials without adequate space and staff for proper handling. Mounted animals need specially designed wooden boxes, and dioramas with glass or clear plastic covers need adequate transit cases of sturdy cardboard or wood to prevent excessive deterioration. Ample shelving or bins will be needed, and storage in their regular transit cases of all large items will, of course, expedite delivery processes. Figures 6–9 and 6–10 indicate processes that centers are presently using.

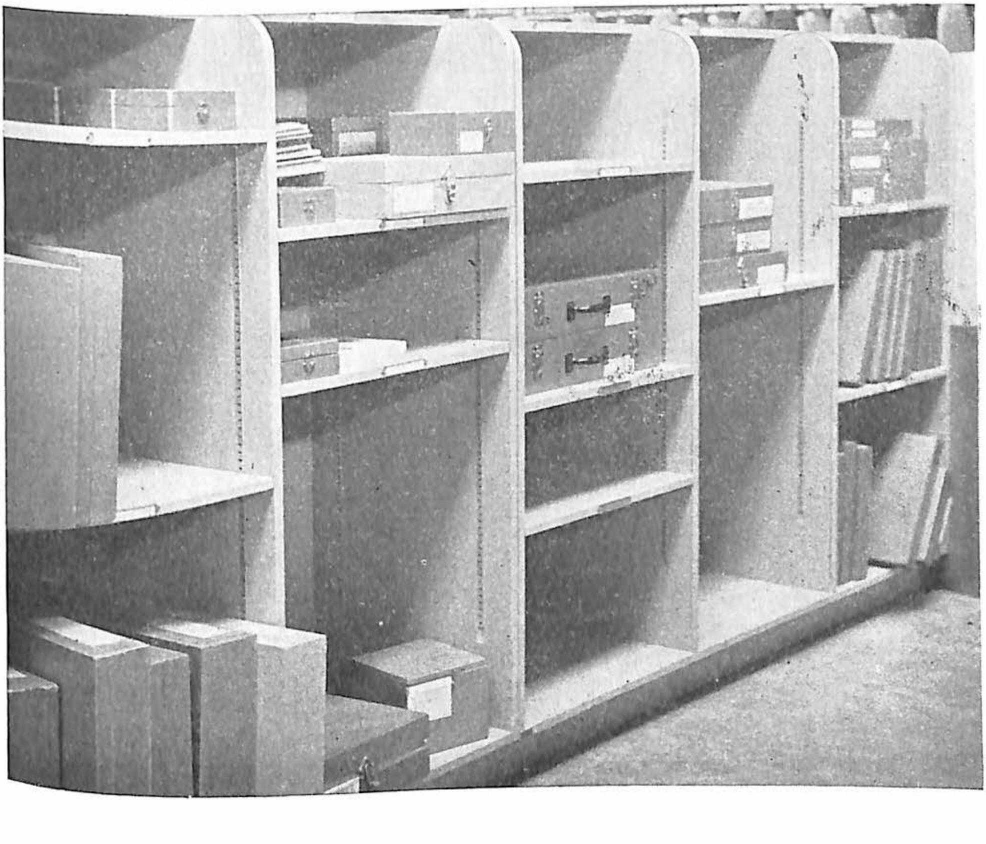
Maps, Globes, and Charts. As indicated earlier, models, dioramas, and exhibits need only appropriate storage shelves against a wall. The same arrangement will suffice for globes if they are stored in transit containers of heavy-duty, reinforced cardboard or fiberboard with straps. Globes will have to be stored in their fiber-

Fig. 6–8. **Seen here is a part of the comprehensive San Diego City Instructional Materials Center headquarters located in the city's Education Center.** ***(Courtesy San Diego City Schools.)***



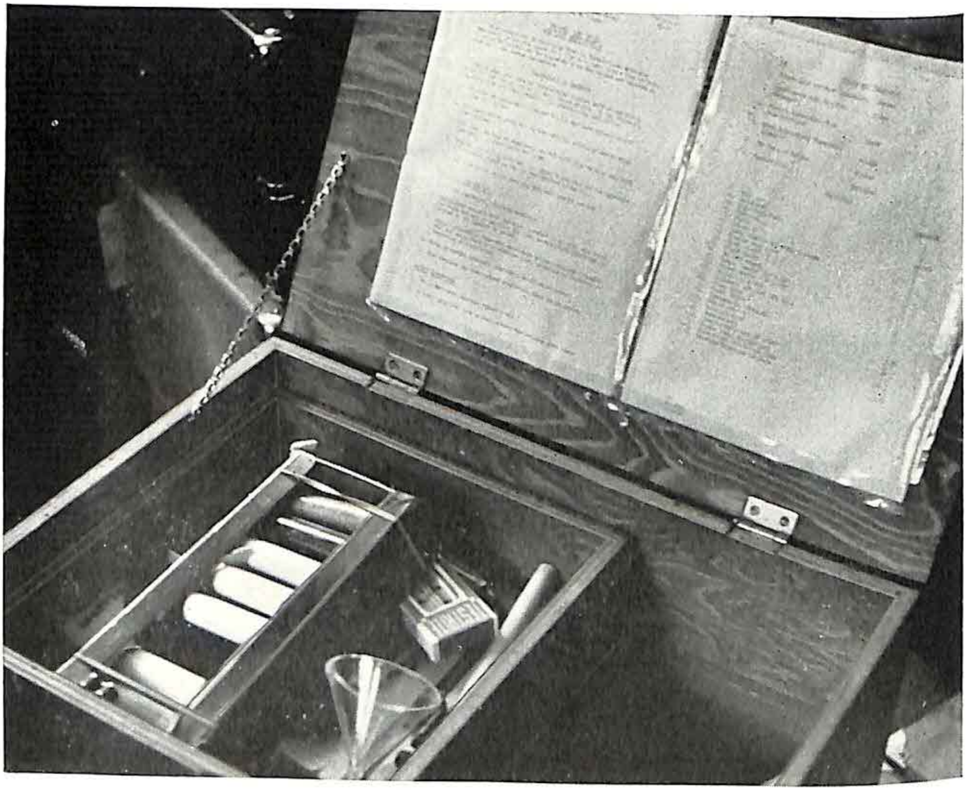
board or corrugated cardboard cases and separated from accompanying metal floor stands. Flat maps and charts may be stored either in a series of drawers of suitable size or in vertical slots made by arranging metal or wood partitions 2 to 6 inches apart in a large bin. When vertical storage is used, all flat materials should be placed between masonite or heavy paper covers. If charts and maps are of the roll-up type, whether on spring rollers or not, they may be stored in long, reinforced cartons of the type portable screens come in, or in heavy cardboard tubes. Storing these tubes or cartons at the center requires shelving or bins so arranged that code numbers or titles are in full view.

Fig. 6–9. Shown here are effective storage provisions for boxes housing realia. *(Courtesy San Diego City Schools.)*



Storage of Equipment. Ordinarily, equipment units are decentralized in the schools; hence equipment storage space requirements at a city school-system center are not large. Appropriate metal or wood shelving and bins need to be built into the available space. Consideration should be given to a modular construction of bins that can be stacked up in horizontal or vertical fashion. This is possible if over-all measurements of height, width, and depth are accurately figured. The main purpose is to provide shelving against a wall or in tiers of bins back to back in the center of a storage space.

Fig. 6–10. Science demonstration kits like this one for elementary school teachers is a popular service. Adequate care in storing and handling such units is imperative. ***(Courtesy Portland, Oregon, Public Schools.)***



TAKING ADEQUATE CARE OF MATERIALS

Audio-visual materials must be maintained in first-class condition or their deterioration will accelerate. Teachers lose interest quickly when the materials they receive from central depositories are outworn in appearance, when film materials break during projection, and when materials look dirty. The director must know what kinds of care and handling processes to prescribe, and he must be able to supervise operational plans as carried out by workers. In the preceding section proper packaging for transit to and from schools was stressed in connection with storage and ease in handling. In this section proper care in terms of inspection and processing is emphasized, and specific suggestions are made for each of the basic kinds of material.

Motion Pictures. After a film is projected, it should be tactually inspected, using standard motor or manually operated rewinds, or mechanically inspected by means of automatic inspection machines. (See Fig. 6–11.) Where such machines are used, it is frequently reported that a pair of machines and one full-time inspector is a very efficient working combination. Inspectors themselves may be part-time or full-time adults, men or women, and students who come to work after school. Women are increasingly being used to get this important work done. Specific suggestions for caring for motion picture films follow:

1. *Equipment Needed.* The film inspection and repair process demands the following essential items of equipment: rewinds, preferably motor driven; a good quality splicer, preferably a model where the emulsion is scraped off without application of moisture; a sturdy inspection table, preferably where workers may be comfortably seated while working; good overhead lighting; a motor-driven film cleaner, or a small fluid applicator for manual use with the film rewinds; a small light-box for sound-track and frame-matching purposes; a magnifying glass; and a film notcher. Many large centers are also now using one or more automatic inspection machines in their film maintenance systems.

2. *Film-Care Supplies.* The prospective director needs a few words of advice about supplies. Frequently these will have to be

as follows: inspecting visually and tactually; splicing; trimming jagged film edges from a single torn perforation; cleaning with chemicals; treating new prints before projection; analyzing print condition; reporting specific and general conditions on control cards; and replacing damaged footage. The inspector must be taught to let the film slip through his fingers in such a way that defects in film edges, perforations, and film blisters will be consistently detected. Splicing is, of course, an extremely critical operation and must never be done in a slip-shod manner. In general, this task needs close supervision because errors in workmanship lead to more serious damage during later projections. If moisture is used to loosen the film emulsion, the film ends must be thoroughly dried before applying film cement. Another critical aspect of the splicing process is the deft application of the cement by one stroke of the brush, with the immediate lowering of the film press into its clamped-down position. Films may be cleaned while rewinding them, using a cellulose pad dampened with one of the recommended cleaning fluids. As has already been mentioned, inexpensive applicators or motor-driven film cleaners are available.

Another essential process is the treatment of new film prints. This process is identical with the cleaning process except that the fluid is applied to the new prints for the sake of pliability, not cleanliness. Since all film prints ought to be projected before acceptance to check physical print conditions, the film-pliability fluids can be added by allowing the film to pass from the feed reel along a loosely pinched, chemical-dampened, cellulose pad.

The only efficient way to obtain up-to-date information about film condition is to maintain an adequate film-condition report card in a special file on the film inspection bench. Each splice and each damaged-footage replacement should be recorded, as should each film cleaning. Unfortunately this is a job for clerks, and clerks and other technical workers seem to be all too scarce. Replacing footage need not be so difficult a job as generally thought. Actually the only difficulty is the proper matching of the sound track of the new section with that of the old. This job is made easy by ordering replacement footage in units of whole scenes. Thus the splice may be made by joining the last frame of one scene with the first frame of the new scene, and the sound tracks will then be automatically

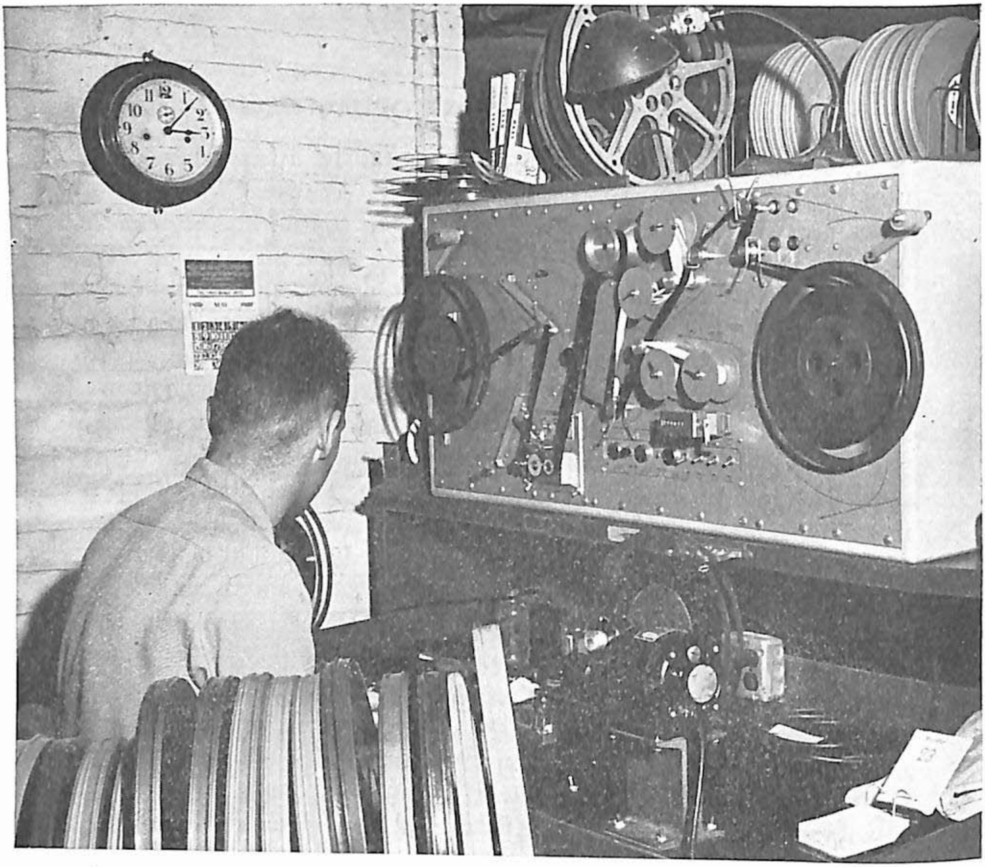


Fig. 6–11. **Good tools are needed for efficient film care.** *(Courtesy Bureau of Audio-Visual Education, California State Department of Education, Sacramento.)*

purchased in quantity as needed. Because of possible alteration in characteristics through evaporation, film cement should be purchased by the carton in the smallest bottle offered. Other supplies needed are cellulose pads (commonly used in connection with mimeo and ditto duplicator machines) for applying fluids manually; "head" and "tail" leader stock; heavy-duty, colored cello tape for fastening down loose film ends; film-cleaning fluids such as Renovex, Vitafilm, Ecco, or Freon-TF; and felt-nib pens and ink for writing on leaders and cans.

3. *Film-Care Processes.* The main processes or film-care jobs are

matched. The light-box and magnifying glass aid this process. When other than scene-to-scene replacement has to be done, the section containing the newly spliced-in footage should be projected to ascertain if sound and pictorial continuity has been maintained.

Taking Adequate Care of Slides. The first essential of slide care is to bind them properly between cover glasses. No slide in any size is ready for distribution until this has been done. Miniature slides or the 2¼-inch by 2¼-inch size may be quickly protected by glass, using the special, metal, snap-on mounts, or they may be bound by using bulk supplies of clean cover glass, standard masks, and ⅜-inch binding tape of the plastic variety. Usually a slide-binding vise is needed for this work if it is to be done in any quantity. The second essential is to keep slides clean. This is a tremendous "window-washing" job if the slide library is large, and precautions must be taken by students or others who are employed to do the work to keep cloths just damp enough with water to rub off the fingerprints and smears, and then to dry the washed glass thoroughly. If moisture is allowed to get between the glasses through breaks in the tape binding, the emulsion and hence the picture may be seriously damaged. The third essential is maintaining good physical condition of the binding. This process demands that cracked cover glass and loose or sticky binding be replaced in time to prevent damage to the picture. To facilitate control of slide materials, a master file card for each set should contain the number and title of each slide and its source, not only to facilitate replacements in case of loss or damage but also to make a quick check-up on the number of slides returned after each use. Slides get mixed up with other sets, or often a slide is forgotten in a slide carrier at one of the schools; hence each slide needs to be correctly coded by set and item number.

Taking Adequate Care of Study Prints. The newest and most effective method for taking care of study prints is to laminate the entire picture between two clear plastic sheets. The Los Angeles audio-visual department owns its own machines for this process, by means of which the necessary heat and pressure are applied. After appropriate trimming to desirable dimensions, the pictures are packaged in cardboard containers for storage and transit. In the St. Louis audio-visual center, pictures are obtained in sets and then sent to the Glassoloid Company, located in Clifton, New Jersey, which is a supplier of the plastic-laminating process service. When embedded pictures get soiled, it is an easy matter to wash them off with a dampened cloth. Another way of preserving study prints is the standard mounting procedure that uses mounting stock of suitable color, weight, and texture, together with rubber cement or photo dry-mount tissue. Such pictures must, of course, be replaced when soiled or damaged. It is also extremely important to show teachers how to use thumb tacks, display hooks, clamps, and tabs for displaying instructional pictures properly.

Taking Adequate Care of Filmstrips. While 35-mm. film splicers are available, this process is not being recommended for torn filmstrips. Arrangements should be made with producers or distributors to replace all worn prints at a reduced price. Filmstrips may be visually inspected, but they should be handled by their edges and then rolled up without cinching, since this may result in scratching by dust particles. Filmstrip cleaners, using the same fluids as for motion pictures, will remove dirt and keep the film base pliable, which of course is essential. When cleaning filmstrips, care against use of too much film fluid is cautioned. Jagged corners of torn perforations may be cut off with a film notcher or scissors to prevent further tearing during subsequent use. It is generally true that the job of caring for filmstrip prints is not carried out sufficiently well, with resulting dissatisfaction on the part of teachers and pupils. Since the volume of use of filmstrips is so high, a new and critical look should be taken at this aspect of the center's maintenance service.

Taking Adequate Care of Disk Recordings. Disk recordings have to be kept clean or they will soon be worthless for instructional purposes. Visual inspection will generally show when cleaning is needed, or when damage by scratching dictates immediate replacement. Cleaning by standard chemical cloths that facilitate dust removal by freeing disks temporarily of static electricity charges is recommended. Such cloths, available at any record shop, tend to dry out and deposit a fine chemical dust on the record. When they are in that condition, dampening them with water will usually restore their usefulness; however, they should be replaced when they get dirty. A cloth dampened with warm, slightly soapy water is also recommended for cleaning records. One other aspect of record care is the determination of groove wear that may not show up visually to the unaided eye. When high-quality sound is mandatory, records should be checked by playing them, preferably near their center areas, on a record player in excellent physical condition. As was pointed out under storage, records should be stored vertically without being allowed to remain in a slanting position. Also, disk recordings should never be stored near steam pipes or in direct sunlight.

Taking Adequate Care of Tape Recordings. Pre-recorded tapes should be periodically checked for the distortion that may result from what is called magnetic "print-through." This is a slight modification of the original magnetic patterns, made by the interaction of the fields of magnetic force on the adjacent layer of tape on the reel. These transfer patterns have considerable intensity, so that the net effect is a faint echo that may be annoying. "Print through" is less likely to occur in 1.5-mil (standard thickness) tape. It is also less likely to occur, or is less noticeable, if tape is stored under cool conditions, since it increases proportionately with the temperature. Polyester base tape is not affected by temperature and humidity as is regular cellulose acetate tape, and therefore this somewhat more expensive tape is recommended whenever tapes have to be stored under other than normal conditions. Best long-run temperature conditions for tape storage to prevent embrittlement are 60° to 70° F. and 40 to 60 per cent relative humidity. Another aspect of the proper care of pre-recorded tapes is the use of leader and trailer tape to eliminate the gradual shortening of footage due to the almost inevitable breaking off of end pieces. Also, standard splicing tape ought to be used instead of the regular varieties of plastic adhesive materials.

The Role of Ideal Storage Conditions in Caring for Materials. It has been emphasized again and again that storage under ideal conditions is a prime essential in safeguarding the quality and life of materials for classroom use. Dust and excessive dryness will work havoc on some items, and moisture will have adverse effects upon others. Hence, air conditioning may prove to be the most important of all care essentials. Properly designed boxes and packages for the storage and transit of kits, globes, realia, and models ought to be provided, else public monies will be wasted. The director is responsible for bearing in mind these important details and should make sure that appropriate action is being taken.

ADEQUATE CARE OF EQUIPMENT

Attention must now be turned to the critically necessary job of taking good care of audio-visual classroom equipment units. Several recommendations have, of course, already been made that have a bearing on how this work is to be done, and it would be well to recall these before proceeding to specific suggestions. First, it has been recommended that every school plant have assigned to it for the year, and perhaps permanently, as many of the frequently needed projectors, recorders, record players, and other equipment as the school's program demands; second, that centralized pools of equipment be set up at the school-system audio-visual center to meet special needs, and even to meet regular needs until adequate decentralization is feasible; third, that each school building establish its own school-building service center, including a school audio-visual program leader and an operator service crew. Insofar as adequate care of equipment is concerned, these recommendations, made in Chapter Five in connection with facilitating the use of materials, mean that:

1. Certain equipment-care essentials should properly be carried out in each individual school-building unit, while other maintenance jobs need to be referred to the school-system audio-visual center. In this connection minor operations of cleaning, lamp changing, and other adjustments ought to be done at the school-building center, and all other major repair work ought to be carried out at or through the main school-system audio-visual equipment shop.
2. In cases of equipment breakdown, temporary replacement equipment units need to be arranged for, either from the centralized school- system pool of equipment or from the nearest, reputable equipment repair agency.
3. The central equipment servicing and maintenance shop must be related to the care and inspection programs in each school building in very definite ways. In this connection it is recommended that the A-V central shop technician be the chief A-V technician for the school system and that the main shop serve as a distribution center for all equipment supplies.

Whenever full or part-time center technical assistants are lacking, the director will have to formulate with his building coordinators the best possible plan of action for the superintendent's approval. Such a plan may call for the negotiation of a flat-fee service contract with the nearest A-V dealer; immediate action by each building coordinator to order repair work to be done by business firms, up to a specified expense limitation for the year; the emergency replacement of equipment by the central service center or by the local A-V dealer; the use, on a part-time or over-time basis, of a school system electrician, physics, or industrial education teacher, and the use of preventive maintenance procedures by periodic overhaul of equipment by a reputable nearby service company. Or the plan may call for the use of a talented crew of high school students on a part-time employment basis to check tubes, lamps, and do other needed work short of a major overhaul job.

The job of caring for equipment is made easier when the kinds of equipment used have been standardized. One thing is certain, if the equipment units that make possible the use of audio-visual materials are not maintained in good condition, then the service program may just as well be liquidated. Beginning directors must find ways to solve this over-all problem and must check this service program aspect continuously if their services are to be held in high regard. The prospective director, therefore, needs to be a technician up to a point. While he *should not* be a repairman himself, he needs to be able to hire one, he must be able to identify operational deficiencies in all kinds of equipment, and he needs also to be an organizer and overseer of technical services and activities.

Space is not available to undertake a detailed descriptive treatment for the operation and servicing of specific makes of projectors. For this detailed analysis of operation, the reader is referred to such complete works as Finn's *Audio-Visual Equipment Manual*,[1] to other references in the chapter's Suggested Readings, and to one other source of complete and detailed information that must not be overlooked, namely, the manufacturer's service manual for each specific make of equipment. Such manuals must not be confused with the booklet of operating instructions supplied with equipment units upon purchase. The director will have to write to the manufacturer for them, and this is an indispensable reference file that every audio-visual center shop should have. Such service manuals enable the director, or chief technician, to order commonly needed spare parts by manufacturer's standard catalog numbers, enable him to write better technical bulletins for coordinators and for teachers, and also serve as the director's self-teaching guide. Actually, such service manuals for each type of equipment owned ought to be in the hands of each school-building coordinator as well. The prospective director needs to see the servicing and maintenance of the equipment job in a general, over-all perspective in order to make proper local decisions. It may be necessary for him to increase his own skill in this connection as opportunities become increasingly available. The next topics deal with general-care essentials for equipment servicing and for setting up shop facilities.

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[1] James D. Finn, *Audio-Visual Equipment Manual*, Dryden Press, New York, N.Y., 1957.

General Care Essentials: Cleaning Lenses of Projectors. Dirty lenses are common causes of defective picture projection, and the only remedy is to set up proper lens-cleaning procedures and routines. Similar optical elements are included in all projectors. These are as follows: lamp reflectors, condenser lenses, and objective lenses. Some projectors, such as overhead and opaque projectors, have front-surface mirrors and reflectors. The following procedures and precautions should be noted:

1. Optical elements in motion picture projectors, because of high-speed mechanisms and high operating temperatures, accumulate dust and oil particles rapidly. Hence, the back of the projection lens ought to be wiped with lens tissue before each use of the projector. Unless this is done, the collection of dust particles and an oil film on the back of the objective lens will cause an objectionable picture-halo of haze.

2. Front-surface mirrors and reflectors pose another problem, since they must be brushed off lightly with camel's-hair brushes to avoid scratching. No lens-cleaner solutions can be used because some of them may contain chemical agents that will mar the top surface of the mirror. Fingerprints on front-surface reflectors cannot generally be removed except by a water-dampened cloth; however, seriously impaired mirror surfaces may be replaced at the factory. Regular mirror surfaces may, of course, be washed or wiped off in the manner prescribed for other optical elements.

3. Service manuals published by manufacturers should be studied

to ascertain the nature and exact positioning of optical elements, so that when they are removed for cleaning, they may be accurately replaced.

4. Regular schedules or routines need to be established for cleaning lenses. Except for daily inspection of objective lenses, weekly, monthly, school term, or end-of-year schedules should be decided upon according to local needs. A spot check by any supervisor, student, coordinator, director, or chief technician is needed to see that routines are being followed.

5. Lens tissues and lens-cleaning fluids need to be stocked in quantity.

6. The director needs to issue one or more illustrated bulletins on the topic of cleaning lenses. Such bulletins or manuals may be prepared by the director himself, by technicians, or by a committee working under his editorship.

General Care Essentials: Proper Oiling of Equipment. Again the manufacturer's service manual must be consulted and exact oiling procedures noted. Record players, tape recorders, blower fans and motors in all kinds of projectors, etc., need to be carefully checked for oiling requirements, since failure to comply with the manufacturer's instructions nullifies warranty provisions and decreases quality of service. Of course the tendency is either to oil too much or too little, and the only safe procedure is to follow stated requirements by attaching a service card to each equipment unit for a visual check on service or to maintain a file of such cards at each school building. Wherever an equipment pool is based, service cards should be maintained, and the director or equipment supervisor must take this job seriously. Strict orders on oiling, and clear instructions on ascertaining if too much oil has been added, should be issued and then compliance noted. In general, motors in record players and tape recorders are self-oiling, but this should be definitely ascertained. In the extremely critical case of motion picture projectors where oil cups are provided, oiling about every month, or if use is very heavy, oiling every 4 hours of projection, or every sixteen uses of the projector may prove to be more satisfactory. When optical elements show excessive accumulation of oil film, or if projectors smoke a little during operation, the amount of oil should be decreased. Proper oiling cans for adding one drop at a time and the recommended grade of light oil should be stocked in quantity by the central shop.

General Care Essentials: Changing Lamps. Prefocus base lamps are easy to change, and the only caution is to avoid finger burns by cooling off the burned-out lamp before replacing it. The best way to do this is to run the motor, thus using the blower to cool off the hot glass. It will be necessary in lightweight motion picture projectors without the stop-on-film feature to disengage the film before the motor is turned on. Exciter lamps of bayonet-base type are even easier to change because their operating temperature is low.

The director should take care that correct specifications are given when ordering lamps, since the life of a projection lamp is shortened considerably when line voltages are higher than the lamp was made for. It is recommended that the local line voltage be ascertained and that the lamps ordered should be manufactured for use at slightly higher line voltage than is maintained by local power companies. For example, if the local line voltage is usually 115, then lamps should be ordered that are marked for use on 120-volt circuits. The slight drop in illumination is negligible and the life of the lamp is increased by several hours on the average. However, all lamps should be replaced when they become blackened and blistered even though they haven't burned out.

General Care Essentials: Adjustment and Alignment of Optical Systems. It was pointed out previously that projectors generally make use of the same kinds of optical elements, and it is obvious that such elements have to be centered and lined up on the optical axis for evenness of the projected field of light. Projecting a focused field of light on the screen permits an immediate visual inspection of defective alignment because dark corners or unusually bright areas will appear within the field. Since as many of the optical elements as possible are lined up and centered in fixed positions, adjustments have to be made at specified points. Usually trouble arises when the lamp socket becomes loosened in the process of changing lamps and is either lowered or turned clockwise or counterclockwise in its clamp. The first of the two changes in the lamp socket just mentioned will cause a darkening of the lower part of the projected field. The use of asbestos gloves and dark glasses will, of course, be required for the process of loosening setscrews on the socket clamps and raising the socket (while the lamp is burning) to the proper position where the field of light is uniform once more. The second condition mentioned, that is, the turning of the socket, darkens the left or right portions of the projected field of light. The rule to apply here is that the plane of the lamp filament should be parallel to the lens elements. In making such adjustments locally, a light shield ought to be held by a helper or mounted in such a way that the worker's eyes are protected from the bright light of the lamp.

One other adjustment that may have to be made is the moving of the reflector and lamp socket assembly closer to or farther away from the condenser lenses. This operation also must be done with shielded eyes. Always the test is an even, sharply focused, field of light on the screen. Bright center spots, darkened corners, and vertical streaks of light and shadow through the screen are symptoms that reveal trouble with optical alignment.

Sometimes condenser lenses are positioned and held parallel by coil springs. In checking for trouble, make sure that even the fixed optical elements are positioned properly as intended by the manufacturer, but sealed-in optical elements should never be opened. Service manuals should be studied carefully to note special instructions about optics, but in general it is best not to move the lamp reflector or disturb its distance from the lamp, and none of the lens elements should be touched while hot.

General Care Essentials: Replacement of Optical Elements. This is another equipment-service job well within the usual school-system audio-visual center's service routine. Here again is a case in point revealing the advantage of standardization, since with projectors of only one manufacturer on hand, it is easy to carry a stock of spare lenses and heat-filter glasses. To carry a stock of spares for several different makes and models would be difficult and uneconomical. All that is required is to proceed according to diagrams in service manuals of the manufacturer and replace lens elements according to standard part numbers. Care should be taken to work out a labeling system whereby spare lenses are clearly and accurately marked to avoid later mistakes. A card system for easy ordering of spare parts as supplies run low is an urgently needed aspect of the *shop supplies* plan.

General Care Essentials: Testing and Replacement of Electronic Tubes. With an increasing number of record players, tape recorders, and motion picture projectors, all using amplifiers, the job of testing tubes is an urgent one. It may be done in two ways: Either tube testing equipment must be purchased that will handle the kinds of tubes used, or the radio-television service company downtown will have to test them. In the latter case, tubes should be taken to the local dealer for checking and the replacements purchased there as needed. If equipment and staff are available, it is best to maintain a stock of tubes and then replace defective ones without delay. While not all amplifier troubles are due to defective tubes, the tube checking and replacement job is simple and can be done with a minimum of technical training. Searching out other amplifier-circuit troubles is a time-consuming task, and unless the large volume of electronic equipment on hand warrants the addition of trained technicians to the school staff, it is advisable to have this repair work done by audio-visual equipment dealers who specialize in service to schools.

General Care Essentials: Equipment Switches and Electrical Cords. Audio-visual equipment units demand different types of control switches and electrical cords. Except for battery-powered radios, tape recorders, and picture viewers, all have power cords usually fastened to the equipment internally by clamps and soldered connections. Such cords may have built-in on-and-off switches, and when this is the case, spare switches ought to be on hand for replacement purposes. A good soldering iron ought to be on hand to facilitate arrangements for the quick repair of all faulty power lines. Also, because the loose connections and broken lines that are such frequent sources of trouble are not easy to discover by visual means, a test lamp with appropriate connectors, and a short speaker line cord with alligator clamps ought to be handy for checking purposes. Since on-and-off power switches and volume and tone control switches often cause annoying trouble, such units ought to be stocked for fast replacement. Sometimes these switching units get dirty, and cleaning them by brushing with carbon tetrachloride may correct the difficulty. This is a job for a full-time or part-time technician, if available; otherwise, for a local or nearby repair agency. Proper care of switches and cords is an element of maintenance that makes a big difference in satisfactory performance of equipment.

Inspection of Equipment after Use. One of the main essentials in taking good care of equipment is the discovery of operational defects before they can disrupt teaching plans in the classroom. Whenever equipment has been used, it needs to be checked for faulty performance before it is used again. One of the most time-consuming service jobs is the one where technicians have to open up an equipment case, set up the projector or tape recorder, actually try out test material of familiar pictorial and sound content, and then proceed to clean the lenses, tighten control knobs, repair cords and switches, etc. However, this job of readying equipment for the next borrower is a detail of such importance that to fail to get this work done properly is to endanger the whole service program. The importance of good care of materials has been stressed previously, and the care of equipment is directly related to the prevention of damage to materials.

In order to decrease the time involved in checking equipment and materials after classroom use, some coordinators and directors require the teacher and/or the operator to fill out a short check-slip, stating that the equipment performed satisfactorily and that the material itself was in good condition and was used without interruption. Dependence upon such forms is dangerous, and an inspection schedule must be set up in conjunction with such a reporting system to catch trouble before it catches teachers and pupils. It is this inspection and reporting system that sets in motion the process of referring to school-building or school-system audio-visual shops the equipment units that need repair services. The discussion of general care essentials has preceded, and now some specific considerations for taking good care of equipment will be discussed.

Some Special Considerations for Motion Picture Projectors. Good care of motion picture projectors involves a few special considerations. These are as follows:

1. Fuzz and dust particles must be removed from the aperture by means of a bristle brush and lintless cloth, taking extreme care that no metal object comes in contact with metal parts of the film channel.
2. Remove excess oil and dirt from around the filmgate and lens barrel. Complete cleaning of these parts calls for a brush, cloths, and carbon tetrachloride.
3. Spring and fiber belts must be repaired or replaced as needed.
4. Sprockets must be checked to ascertain if hard-packed dirt and oil has built up in back of the sprocket teeth. Such accumulation should be removed by a wooden object (never metal), otherwise film perforations will be enlarged and perhaps torn as film tension pushes the tooth and its enlarged base through the opening. Carbon tetrachloride may be used to soften this hard-caked deposit if it cannot be pushed away with a match stick or a hard wood splinter.

5. Jumpy film motion on the screen and noisy operation may indicate that the intermittent movement needs adjustment or that film claws have become grooved and need honing down on the under side of the claws. Such work must not be attempted except by expert technicians, but overhaul and repair work of this nature must be carried out on schedule.

6. The SMPTE test film *Jiffy*, previously mentioned in Chapter Four under selection of motion picture projectors, as well as other test films are urgently needed in checking pictorial and sound elements of projection performance. Exciter-lamp focus and speed governors need particularly to be checked, and test films are extremely valuable for this work.

7. Magnetic sound motion picture projectors need to have erase and record heads cleaned cautiously with lens tissue. The use of metal objects, as was pointed out earlier, should never be inserted for cleaning purposes where film guides may be scratched.

The extent to which audio-visual shop facilities are developed will depend upon size of the equipment inventory and the availability and adequacy of local repair service agencies. Simple arithmetic, comparing costs of repair by agencies outside the school system, cost of cartage, and cost estimates for a center-staff technician and spare parts if a shop facility were to be established, will establish need for increased facilities. Maintenance costs for motion picture projectors, record players, and tape recorders will be highest, because of their moving parts and electronic components.

Some Special Considerations for Magnetic Tape Recorders. What has been said before about amplifiers and tubes, of course, also applies to tape recorders, but maintenance of tape recorders involves a few characteristic operations that may well be carried out in a school-system audio-visual shop. (See Figure 6–12.) The following suggestions should be considered:

1. Drive and rewind belts and rubber-rimmed wheels need to be checked for proper tension and wear. Oftentimes these may be easily replaced by individuals with a minimum of technical training.

2. The squealing of pressure pads on tape can be stopped by cautiously roughing up the matted-down surface of the pads that press tape against recording and play heads.

3. Magnetic heads need to be wiped free of accumulated iron oxide.

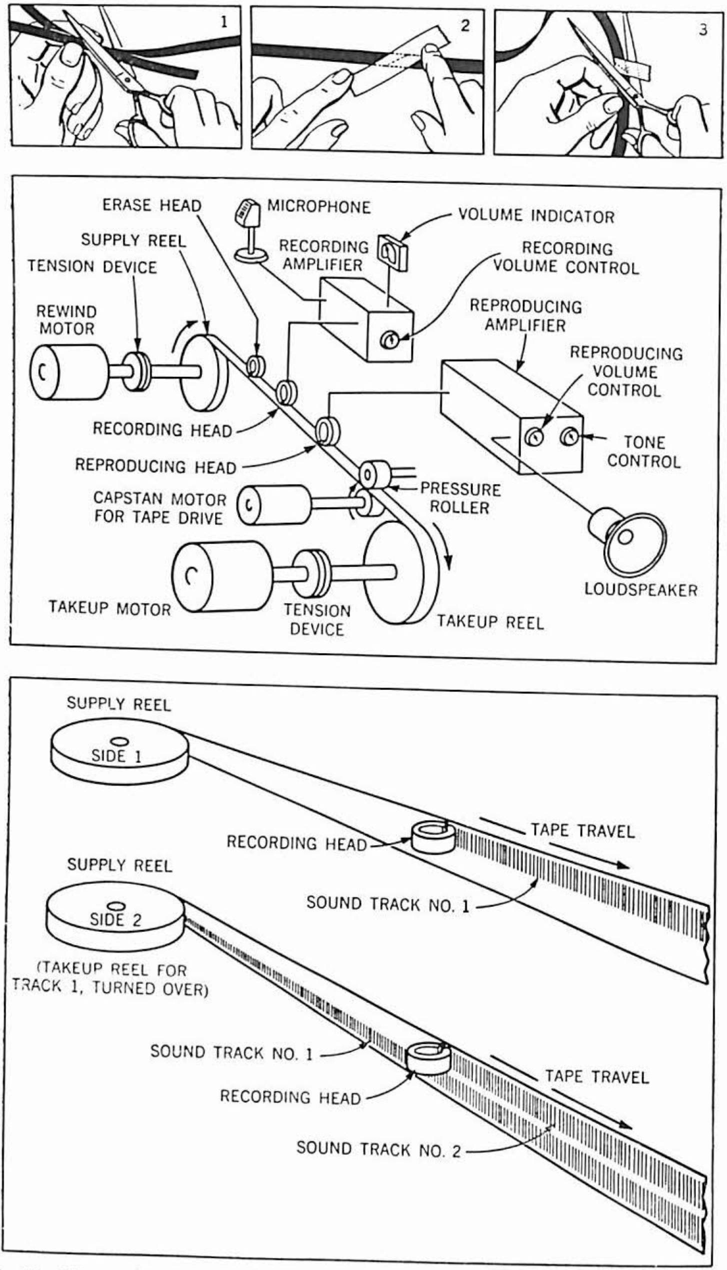

Fig. 6–12. These diagrams show why recorded tapes and the tape recorders themselves need to be given characteristic treatment and care. *(Courtesy Audio-Devices, Inc., New York City.)*

4. Magnetic heads need to be checked for proper alignment, and for this purpose a test tape procurable from Audio Devices, Inc., New York, is indispensable (mentioned previously in Chapter Four under equipment selection).

5. Tape recorders need to be protected from dust at all times and all accumulations of dirt around rollers and capstans need to be removed frequently.

Some Special Considerations for Record Players. Record players are generally available in large numbers in almost every school-system, and it is sad that they are not cared for in better fashion, since damage to disks is so frequently the result. While correction of serious trouble in amplifiers is, as has been said, the job of expert technicians, many maintenance tasks ought to be carried out in the local school and school-system inspection and repair shops. Special suggestions are:

1. One of the first essentials of care is to convert all existing styli and cartridges to the diamond type. Though higher in cost, diamond styli are the most economical in the long run. Stocks of replacement cartridges and styli of the appropriate type should be maintained for ready use. Standardization, wherever possible, is recommended to simplify inspection and replacement.

2. Styli and cartridges collect dust and dirt. A camel's-hair brush is needed to brush away this accumulation. The dirtier the records, the more often this has to be done.

3. A microscope to examine styli for wear is needed, or a test record commonly available may be purchased at any record shop. In such records, wear of the styli is determined by noting visually the change in color of the grooves over which the needle has traveled.

4. Pickup arms need to be fastened down and kept from banging during transit. Such screws, hooks, or clamps must be continually checked and tightened.

5. Turntable speed checks need to be made by means of stroboscopic card-type disks; other audio-test disks are available from such companies as Dubbings Corporation, and Cook Laboratories (mentioned previously in Chapter Four under selection of equipment).

6. Because of moving mechanisms, dust and dirt accumulate in hard-to-reach places; hence special cleaning and inspection routines must be set up to keep machines in good condition.

Some Special Considerations for Projection Screens. Those in charge of inspection and maintenance of audio-visual equipment should not forget the screen. Whether mounted permanently on walls, or whether carried as a portable unit, screen fabrics and tripod or other support systems need to be kept in first-class shape. Tears, smears, wrinkles, and adhesive tape have no place on a screen, nor have jagged metal corners, bent support rods, and weakened fasteners. A full stock of replacement units and parts, including fabrics, should be on hand to keep screens clean and in good repair. Again standardization of screen makes, sizes, and types will facilitate inspection and maintenance.

The Audio-Visual Shop as a Supply Center and Clearing House. In the foregoing paragraphs the audio-visual shop has been pictured as a supply center for spare parts, lamps, styli, screen fabrics, oil cans, belts, switches, electrical cables, special connectors, cleaning fluids, and tissues. The shop, as has also been implied, is the headquarters for the maintenance activity that can be carried on locally. This activity has been implied by discussions under the headings of general care essentials and under additional specific processes and suggestions for a few of the major kinds of audio-visual equipment. One aspect of the supply problem has not been mentioned in sufficient detail, and this is the construction by the central technician of a supply of needed special connectors. In a complicated program, such as those conducted in schools today, a variety of connectors need to be made up and supplied to the various school buildings. Short speaker-to-projector cords, cord adaptors for various jacks and fittings, and "Y" cable connectors for feeding two microphones into one tape recorder input, are just a few of the many items needed in quantity. Also, maintaining a stock of projection lamps and electronic tubes is no easy problem to solve. Certainly, a stock-card system is called for to facilitate inventory control and periodic ordering. Some metropolitan school systems maintain supply depots or agencies known as central stores from which teachers, school principals, and audio-visual personnel draw needed supplies that are purchased in large quantities annually. The audio-visual director should take whatever steps are necessary to inaugurate as many economies as are possible by central purchasing. Under central-purchasing conditions, the problem of adequate inventory procedures is eliminated for the director; however, a system should be worked out whereby appropriate lamps and other supplies may be identified by standard code numbers. Here once more the advantage of standardized equipment lists is made clear.

One other aspect of the audio-visual shop activity is the clearing-house function. Equipment inventory cards with purchase dates, repair and assignment data, and serial numbers must be maintained. Furthermore, equipment units that have to be shipped out for extensive repair work ought to be processed by the central shop staff, that is, logged in, sent out for repair according to contractual arrangements, inspected upon return from the repairing agency, and delivered to the school building as originally assigned. This work when handled by the shop as a central routing and clearing-house agency relieves school-building personnel of annoying details. Much of the extensive repair work, however, ought to be planned and carried out during months when the schools are not in session.

The director who sets out to organize the kinds of procedures and processes for handling, caring for, and utilizing materials and equipment described in the preceding pages of this book, must realize the necessity for a clerical, technical, and professional staff that can get the work done in terms of effective teacher service. National and state organizations are giving this problem the serious attention it deserves. For example, the State of Indiana, Department of Public Instruction, in its Bulletin No. 218 relative to initiating and expanding audio-visual programs,[2] suggests the following standards for staff:

> 1. Each school system should have someone responsible for the audio-visual program. He may be called a director or supervisor. School systems with 50 or more teachers and all counties should have full-time professionally trained audio-visual supervisors. . . . Also, he should be provided with sufficient clerical and technical assistance to permit him to devote his major energies to professional administration and assistance in the utilization and preparation of materials.
>
> 2. Each individual school should have an audio-visual coordinator . . . schools with 10–25 teachers should have at least fourth-time coordinators; schools with 25–50 teachers should have half-time coordinators; schools with over 50 teachers should have full-time coordinators. . . . Also, clerical and technical assistance should be provided.

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[2] *The Audio-Visual Program*, Bulletin No. 218, State of Indiana, Department of Public Instruction, Indianapolis, Ind., 1956, p. 127.

Building a comprehensive staff organization, not only to carry on the work of the audio-visual center as a headquarters unit but also as a system-wide service force reaching into every classroom, is a formidable problem, and it may have to be solved in unconventional ways.

DEVELOPING A SYSTEM-WIDE STAFF ORGANIZATION

It is not an understatement to say that audio-visual service organizations throughout the country are miserably understaffed. In many cases the work of handling and caring for materials and equipment at the central headquarters is apparently being done quite well, but at the school-building service and operational level, the work is not being accomplished satisfactorily. Time after time city audio-visual service directors have said, "I don't have adequate staff to do what I know how to do." In Chapter Three it was pointed out that in general the pace at which teachers are being taught audio-visual utilization skills locally is woefully slow. To step up this pace, so-called mass-competency development procedures were described, but again just how can this work be accomplished without personnel services?

In addition, the work of selecting and purchasing materials and equipment units; the work of organizing, publicizing, distributing, and caring for them; and the work of providing service to teachers at the vital, all-important classroom level must be accomplished also at an adequate pace. The director as an executive must identify specifically just what work must be performed, how expertly it must be carried out, and then he must seek the help of and deploy individuals to exert necessary effort for the tasks at hand. Suggestions for building the staff organization will be made first in terms of headquarters work requirements, second in terms of work to provide school-building services at the classroom level, and third in terms of work demanded for system-wide processes.

Staff for Audio-Visual Center Operations. Whether the center consists of one small office or a whole building, and whether the director of the city-wide program of service is a full-time worker or not, he must acquire a central staff proportionate to an allotted personal services budget. His own time, however little he has at his disposal, must be used to the best advantage, and the way this time is spent will determine the nature and scope of the success of the program at any operational level. Therefore, the director needs to obtain workers to carry out the functions previously defined. These are classified in general terms as follows:

1. *Administrative and Supervisory Functions.* As the program of audio-visual service expands, particularly in the larger cities, professional assistants will inevitably be needed. Consultants may be placed in charge of: (a) each level of instruction as elementary or secondary school activities; (b) kinds of materials, such as textbooks and library books, or of projected or nonprojected materials; (c) departments or divisions such as radio, television, photographic and graphic production; or (d) service functions such as in-service education, distribution, business management, and the school coordinator program.

2. *Secretarial and Clerical Functions.* These workers, if money isn't available to employ them on a part or full-time basis, may have to be recruited from local high school commercial departments. Students can give good service, especially if work is laid out with clearly stated instructions, and several students on a schedule may, of course, provide continuous service during most of a school day. Part-time directors ought to arrange, if at all possible, for the employment of a qualified part-time worker (student or nonstudent) during the period when they are free of teaching duties. If no budgetary support is feasible, or if the available funds will not pay for the work that must be done, there is always the possibility of recruiting parents through the school's PTA organization who will contribute the needed hours of clerical services according to a rotating schedule. Admittedly, mixing paid and gratis workers may be difficult, but such stop-gap measures are better than the consistent misuse of the director's time on these activities.

3. *Technical Functions.* Occasionally individuals who are physically handicapped but otherwise qualified may be employed at reduced cost because of service-disability payments or other supplementary financial support. Such individuals often prove to be unusually dependable workers. Part-time employment of capable students during after-school hours and on Saturdays to inspect materials and carry out prescribed maintenance procedures is also a possibility. Because closer supervision of the work of part-time workers is generally needed, the director ought to make the most responsible individual of such crews an operational supervisor, inspector, and checker.

4. *Delivery Functions.* In small centers workers for the delivery service may also have to be recruited on a voluntary basis. This function may also be carried out, as indicated in Chapter Five, on a mileage-payment basis, using building coordinators, regular school-trucking-service personnel, and legally hired high school students on an after-school basis. In large centers, full-time trucking crews are mandatory.

5. *Photographic and Graphic Production Functions.* A minimum of one full-time staff person for this function should be insisted on before undertaking system-wide service in this field. For occasional production projects, local mechanical drawing teachers and art supervisors may be induced to donate services. School-building production facilities, that is, photo darkrooms and art departments, using student projection clubs, art teachers, and audio-visual coordinators, may be organized and utilized on stop-gap measures, but such procedures will not prove to be so successful as a permanent arrangement.

6. *Combination of Functions.* Some individuals are so adaptable and cooperative and are so willing to learn that it is possible to combine a wide variety of functions within the scope of service provided by one full-time worker. Frequently a technical worker is interested in photographic production and can make a beginning in this field as well as carry out other services, such as helping the director in teaching equipment operation skills to teachers and school-building coordinators. It is usually better to organize personnel forces creatively and gradually than to give up in the face of obstructions; however, local conditions will have to be considered and weighed carefully in taking action.

Staff for School-Building Services. Throughout the preceding chapters in this book, particularly Chapters Three and Four, the use of a school-building leader for the audio-visual service program has been implicit. This audio-visual leader, now commonly referred to as the audio-visual building coordinator, seems to be the key to successful services for teachers at the day-to-day instructional level. Every statement of duties of the coordinator that the writer has seen includes the job of helping teachers use materials more effectively, a professional supervisory function, as well as organizing and overseeing the purely physical and mechanical details of the building's service program. Actually, this makes the building coordinator a unit director working with and for the school-system director but appointed by and responsible to the school principal.

In a very real sense, therefore, the audio-visual building coordinator also plays the roles of executive, supervisor, audio-visual specialist, and equipment technician. Everyone recognizes the absolutely essential nature of the coordinator's service in the realm of physical details, but some school superintendents are apparently afraid of the implications for higher salaries if they recognize and utilize the services of a talented school coordinator in more professional ways, for example, in supervisory capacities. In the author's view, school superintendents should "go all out" in attempts to discover talented teachers on their staffs who, through their valuable experience working with colleagues, form a cadre of school-curriculum leaders. Willingness to express open appreciation for this service is shown by Curtis Davis, Assistant Superintendent of Schools in San Jose, California, who wrote the following Foreword in a manual[3] for school coordinators:

> Effectively used audio-visual materials represent one of the great advancements in education during the past few years. As a school coordinator, much depends on you as to how well these materials are used. The extra work required and the many coordination duties are well known and appreciated by all.
>
> When you get discouraged at machines breaking down and the schedule going haywire, just stand back for a moment and think about the importance of what you do. It takes you to make the program click.
>
> This booklet will help you greatly in your work. Miss Zingheim and her staff are to be congratulated for producing it. Best wishes to you in your work.
>
> Curtis Davis
> Assistant Superintendent

While the point of view of the author in previous chapters has been clearly stated, an additional listing[4] of the major duties and responsibilities of audio-visual coordinators in the Grosse Pointe, Michigan, school system will be of value. The listing follows:

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[3] *Handbook for Audio-Visual Coordinators.* Curriculum Monograph No. 85, prepared by the Division of Instructional Materials, San Jose Unified School District, San Jose, California, 1955.

[4] By permission. From Wanda Daniel, "The AV Coordinator on the Rise," *Audio-Visual Instruction*, Vol. 2, Issue 4, 1957, pp. 100–102.

MAJOR DUTIES AND RESPONSIBILITIES

(1) Counsel teachers in the wise selection of audio-visual materials.

(2) Work with teachers to improve utilization and production of audio-visual materials in the instructional program.

(3) Compile teacher's monthly orders for audio-visual materials and forward them to the instructional materials center.

(4) Train teachers in the use of audio-visual materials.

(5) Organize the scheduling and use of AV materials in the building.

(6) Be responsible for the care and maintenance of AV equipment.

(7) Serve on the central audio-visual committee:
  (a) Attend monthly meetings with the curriculum assistant in charge of the instructional materials center.
  (b) Help make decisions for the expenditure of the yearly budget for new materials.
  (c) Help select materials that will be purchased.
  (d) Evaluate the functioning of the AV program in the instructional program of the entire school system.

(8) Maintain an effective liaison between the school and the instructional materials center for the efficient operation of the AV program:
  (a) Inform teachers of available materials.
  (b) Promote participation by teachers in previewing materials for purchase.
  (c) Prepare materials daily for pick-up and return to the center.
  (d) Notify teachers when AV materials arrive.

(9) Work closely with and advise the principal on all phases of the AV program.

(10) Demonstrate and interpret AV materials and equipment to the board of education, PTA's and others.

(11) Be on call on an emergency basis to assist teachers with equipment.

(12) Participate in local, state, and national audio-visual programs and conferences.

Just how can the work implicit in these duties be accomplished? The answer is obvious: Organize a service staff comprised of an audio-visual school-building unit director, a committee of colleagues as liaison and planning assistants, and a staff of students as equipment operators, delivery men, clerks, and technicians.

Obtaining the Services of Qualified Coordinators. Audio-visual education coordinatorships are, or may become, the stepping-stones for qualified individuals to system-wide contacts with teachers and citizens, to prestige, and to new jobs as A-V directors, school supervisors, and principals. No director should shrink from seeking the most capable teachers that are to be found on the staff for this purpose. The director has a duty to select the best obtainable personnel and to bring every professional influence and argument to bear upon getting this leadership. He may have to take less than the best teacher available, but he must select and secure the appointment of a person who at least shows promise to a marked degree, and he must then assist that person to undertake needed training.

Remuneration Policy for Coordinators. Individuals who have established their reputations as outstanding teachers, who are capable organizers, and who exert significant professional influence on the teaching ability of other staff members deserve more than letters of appreciation and their own personal professional satisfaction in return for their services. However, in most situations the job is still monetarily unrewarding. In high schools it is fairly easy to provide the audio-visual coordinator with released time from classroom teaching, and in large high schools of fifty or more teachers, as is recommended, a few coordinators have full-time audio-visual service responsibilities. In elementary schools, released time, except in partially departmentalized programs, and where teachers may be released from playground, lunchroom, transportation, and safety patrol duties, is not a feasible procedure. Therefore, the director must put his good influences to work to formulate local policies governing the remuneration of school building A-V coordinators for service rendered. Care should be taken in formulating such policies to include an agreed-upon statement of major duties and responsibilities (a sample of which has been quoted earlier), and to involve school principals, teachers to be served, and other curriculum leaders in the process of developing effective plans of action. It will not be easy to obtain the adoption of adequate remuneration policies, but even though unsuccessful, the campaign to do so must be continuous.

The combined weight of opinions of principals, teachers, and other curriculum people should be formally reported to school authorities, and as needed, community support ought to be enlisted through PTA groups or other local school-community organizations. Reports and requests for action on this problem need also to describe the extra work load and to provide the evidence and results of the duties performed. In addition to personnel incentives as recompense for coordinator services, the director may wish to consider items in the following scale:

1. Reduced teaching load or release from required school routine assignments.

2. Annual bonus payments as salary, starting at $100, in combination with reduced teaching and extra-duty loads.

3. An additional salary payment equivalent to one month of regular pay, and two months extra pay when the coordinator spends two extra weeks at school after school closes in June, and two weeks prior to the opening of school in September on significant service projects.

4. Full-time audio-visual service assignment with rank of teacher.

5. Full-time assignment as an instructional materials specialist, ranking as an assistant principal or at least one salary step above that of a regular teacher.

Other Possibilities for Getting Work Accomplished at the School-Building Level. Local situations may call for various special arrangements. The director may even find himself in the position of being ordered to proceed along lines of organization contrary to his beliefs and best judgment. In such cases he has the choice of resigning or of filing a report of his objections formally as a protest while expressing his willingness to carry out the order to the best of his ability; or before proceeding with compliance, he may seek to develop a compromise plan. At all costs he must examine objectively the evidence presented to him. A few other possibilities that may have to be suggested to the principal or school system superintendent for carrying on school-building services are as follows:

1. Split the work load: assign scheduling and control of equipment and materials to the school librarian; assign the leadership function for teacher-growth processes to the school-building audio-visual coordinator.

2. Combine school library and all audio-visual service activities under the school librarian or under an individual trained as a materials consultant.

3. Assign clerical and mechanical details of school-building service to each staff member on an annual rotation basis, leaving all supervisory functions to the principal.

4. Increase central-office leadership staff by one or more individuals to conduct all professional growth activities in the audio-visual area.

5. Assign all the audio-visual functions in a school to an audio-visual committee.

While some of these possibilities, for example (2) and (4), may work in special local circumstances, the service plan stressed in Chapter Five—which operates under responsible, unitary leadership—provides the greatest potential for success.

Staff for System-Wide Processes. The third aspect of building a system-wide staff organization is the need for getting work of a system-wide character accomplished. Only the director himself can serve as the spearhead for getting this work done, and while school coordinators can assist him, the bulk of it will have to fall upon others. Staff must be recruited for the following kinds of work:

1. *The Work of Formulating Policy for Recommendation to the Superintendent.* Voluntary participation of members of an advisory council or special study group is essential. Such a council needs to be widely representative and may include one or two lay participants in addition to one or more curriculum leaders, school principals, teachers, and school A-V coordinators.

2. *The Work of Analyzing News.* This valuable work is called for by the director on a voluntary, individual-response basis through school principals and other curriculum specialists as well. In addition to deriving data from questionnaire methods, school-building or system-wide committees may have to be organized to study and compile relative information.

3. *The Work of Selecting Materials.* This colossal work load demands considerable individual and group effort. Since this vital group activity needs to be formalized, staff for the selection panels or committees ought to be recruited for definite periods of time and made a part of an important professional organization even though the work is done voluntarily. Selection of instructional materials is such a critical and important business that other supervisory leaders must also bring influence to bear in getting this job done expertly. The procedural basis for this work was described in Chapter Four.

4. *The Work of Selecting Equipment.* This technical work also calls for a group of qualified individuals to participate according to need in solving equipment problems. Recruitment should involve a definite term assignment and should provide for continuity of personnel.

5. *Other Work Needed.* Many other individuals and committees will be needed on an intermittent basis to do the work of writing manuals, preparing lists of materials, preparing handbooks of instructional procedure, and to do the work of teaching colleagues as recommended and described in earlier chapters. Such services will be entirely voluntary, and the director need but ask for it. However, he must always see to it that proper credit is given for the completed results. In some cases experts outside the school system will have to be called in. Some of these experts should be paid, while others need only to be reimbursed for expenses or entertained locally, depending upon the circumstances.

It is thus readily seen that the director of an audio-visual service program builds a large and complex staff organization by using regularly employed full-time and part-time individuals, as well as volunteer workers, both adult and youth, within the school population. Such a staff, however complex it becomes, needs to be welded into a closely knit group with well-defined common purposes. Lines of communication need to be clearly established, and ways must be found to publicize the activities and accomplishments of each functioning unit. Keeping adequate records of such workers and their contributions is no little task, but this responsibility of the director must be met effectively.

The audio-visual service center is the headquarters for other vital records as well, and the prospective director must give careful consideration to the use he makes of the records he deems it necessary to maintain. The next section discusses this aspect of the audio-visual center organization and activity.

AUDIO-VISUAL CENTER RECORDS AND REPORTS

Directors need to realize the importance of keeping their superiors well informed about the services, activities, and trends of their organizations. Most chief administrators will demand periodic reports, but if they don't, the director who fails to submit them regularly each year misses a great opportunity for piling up evidence of need. Furthermore, he fails to place squarely where it belongs the responsibility for failure to take action on pressing needs. While this may be of little consolation to a harried director, it is nevertheless wise tactically. Moreover, effective reporting inspires confidence for future action. An effective reporting process, however, requires an adequate record-keeping system, and some suggestions for keeping records are therefore discused next.

A System of Records. It would be an easy matter in an audio-visual center to keep so many people busy checking on what the others do, that other important work would go undone. What kinds of records are likely to be useful? This question is difficult to answer because future needs for information can only be predicted. Records may actually, however, make the difference between success or failure, or they may go unused for a decade. In general it is the uses to which records are put that must be the basis for the decision to keep them. To be worth while, some of these uses would have to be: (a) historical reporting, (b) reporting growth and development, (c) predicting outcomes and identifying trends, (d) evaluation of contributions, (e) publicity for developing community understanding and support, (f) identifying instructional and personnel needs, (g) obtaining additional staff and budget allotments, and (h) good business requirements.

The director needs to decide what records will be likely to be significantly useful, and then he needs to set up a process for summarizing them monthly and annually. Cluttering up the files and wasting valuable hours of labor on figures that are actually unnecessary is an unpardonable error. The director will do well also if he keeps in his desk drawer an out-of-sight summary sheet for each month on which to note important major decisions, meetings attended, and unexpected developments. At the end of a term or year, such notes become indispensable. The director is urged to develop his system during his first year on a new job, or at any rate, as early as possible, to provide maximum continuity of the data based on the operational level in effect at the time of his arrival or appointment. The following suggestions merit consideration:

1. Preserve original organization directives, annual budget ex-

penditures, records on classrooms darkened in each school, inventories of equipment units and materials, purchase requisitions, and other vital information such as employment and work records summarized in man-months of service or in some smaller unit of measurement.

2. Tabulate for each month the total number of orders received from each school building in the system.

3. Make a tabulation of the number of each kind of centralized item distributed for each half-year to each school.

4. Set up a tabulation of the use for each month for those materials that are decentralized in each school and ordered from the coordinator's office by teachers. Coordinators report this information to directors.

5. Set up a summarization system in each school through the school-building coordinator for the projection requests in order to tabulate the average number of items for each projection order. Such records are to be totaled at end of year or term as average length of the projection period, number of times classes were combined, and names of teachers who reveal highest competence in using materials. (These records are to be kept at the school coordinator's office only.)

6. Also in each school building obtain a tabulation of the times each term or year that nonprojected audio-visual materials are utilized, such as bulletin-board displays and audio-visual production activities involving slides and models.

7. Maintain accurate records of school meetings conducted for in-service education purposes, including location, attendance, and nature of participation and action.

8. Maintain a listing of individual and group service projects completed as contributions to a program in a particular school and also to the system-wide program.

The director needs also to consider unique ways to obtain qualitative evidence of use of materials, and while this is a responsibility of other supervisory personnel as well, the director needs to tackle the problem in his own area of operations. It can be seen in the foregoing list that tabulations of qualitative data are set up at the school-building level where continuous observation may lead to reliable evidence. The preceding items of information may be summarized in a number of different ways. In Atlanta, Georgia, for example, the director[5] of audio-visual education maintains a record system that provides among other statistics the following: (a) showings per teacher, derived by dividing total showings by number of teachers in the school, and further indicating a breakdown of showings according to motion pictures, still pictures, and all other materials such as recordings and exhibits; (b) percentage of school staffs using materials; (c) average attendance per showing, derived by dividing total attendance by showings; (d) percentage of one-class showings, derived by dividing one-class showings by total number of showings in each school; and (e) percentage of one-item showings, derived by dividing one-item showings by total showings.

Such data are particularly useful, when summarized and tabulated by years, in showing trends and rates of development. Systems for keeping records are, of course, indispensable in connection with programs for public understanding and support and in connection with evaluation activity; however, more will be said about these topics in Chapters Nine and Ten.

Audio-Visual Center Reports. A record system, as has been pointed out, needs to be based upon well-defined uses, and one of these is, of course, reporting progress to all who are concerned. Reports to the public, as well as to the staff organization spread out among the various school units, are of great significance, but the reports being considered here are the reports made specifically to the chief school-system administrators, who in turn use these reports as needed for their own analysis and reporting purposes. Reports to administrators ought to be factual, terse, succinct, graphic, comparative, free of errors, and attractive in format. The use of a summary check-off sheet for the director's desk has been mentioned already as an indispensable item in the record system because the director needs to show clearly his own efficiency as well. The director's annual report may, of course, have to conform to local requirements, but the following suggestions as to procedure may be helpful:

1. Set up a novel introductory section.
2. Report major changes in policy.
3. Report vital statistics according to materials and processes of distribution in comparison to figures for a base year, graphic or

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[5] Walter S. Bell, "How to Take Your A-V Measure," *Educational Screen*, Vol. 33, No. 6, 1954, pp. 229–231.

tabular in format. Continue such comparisons during a five-year period; then subsequently report current year with base year and preceding year only.

4. Organize a section of the report to deal with the two following major aspects of operation, namely, *special needs* and *continuing needs*. Include under each of these the date on which the need should be met, and also include the progress made toward meeting it in the current year. Special needs have to do with pressing personnel problems, urgent new facilities, new demands that have appeared, and how such demands ought to be handled. Continuing needs are the year-to-year problems like improving audio-visual center quarters, increasing the size of equipment and material inventories, installation of outlets and light-control systems in classrooms, and the problem of appointing and training additional school coordinators.

5. Set up a strong concluding section for the report, one that summarizes important aspects already mentioned or makes a strong recommendation pointing to the over-all operational progress for the year to come.

While these suggestions may apply in many ways to other than administrative reports, they are specifically intended for audio-visual reports. Telling the audio-visual service story to the public necessarily involves other points for emphasis and other techniques. The director is advised not to wait until reports are called for, but to set up a record system and reporting process at once. The audio-visual expert must be prepared to facilitate the thinking of top administrative officials by providing sound recommendations for action.

SUGGESTED ACTIVITIES

* 1. An older, two-story school building has been taken over by the school department as its administrative headquarters. You, the director of a growing audio-visual services program, have been assigned three classrooms at the rear of the building on the first floor. Your classrooms are adjoining and on the same side of the corridor. Each measures 32 feet long by 26 feet wide. You are told that this space assignment will have to last for the next ten years. No radio or television service programs are envisioned, and textbooks and other reference services are handled by other agencies. Partitions separating the classrooms are load-bearing walls;

hence they may not be removed, although openings may be made in them. On the basis of the operations described in this chapter, prepare (a) a labeled scale drawing of how you would remodel and use this space; (b) a labeled scale drawing showing your layout of furniture, cabinets, etc., to control the flow of work for the inspection, storage, and distribution area; and (c) study the commercially available storage facilities mentioned in this chapter or as shown in catalogs, and then specify their location in another scale drawing of the storage areas; (d) make a list of the furniture that would have to be built for the new facilities (do not include photographic darkroom furniture in this latter exercise); and (e) prepare detailed construction specifications for any two of the major items listed in item (d).

* 2. As time permits and your needs demand, engage in a thorough study of the main types of audio-visual equipment to develop operational and adjustment skills. Use the manuacturer's instruction booklets for each piece of equipment, and plan out a time schedule for what you need most to do.

3. Outline procedures for an effective stock control, ordering, and inventory process for the audio-visual center shop. Make a list of the supplies that will have to be stocked if schools are going to be well served.

4. Audio-visual centers also have to store fairly large quantities of expendable production supplies for teachers. Would the same stock control, ordering, and inventory process set up in the preceding problem work? If not, adjust headings on the card so that it will work. If supplies like magnetic tape, glass, crayons, and mounting tissue are not to be stored at the center, what other provisions ought to be made? Mention at least two possibilities.

* 5. Assume that you have been appointed to the position of A-V director in a small city where there are ten school buildings. Assume further that you have a reasonably sized A-V center in the high school where your own office is located and that you have been hired to develop a system-wide organization. Sketch out your plan to develop this organization as to staff, duties, service units, use of student crews, and advisory councils. Draw a line-of-responsibility chart for the organization you have established.

6. What characteristics would you like your A-V building coordinators to possess? What recommendations would you make regarding their training, services, and remuneration?

7. Why should directors be concerned with maintaining adequate records of activities and services? Why should a record system be devised

soon after a director's appointment? Formulate the kind of record system you believe would be of maximum helpfulness.

* 8. Examine a number of annual reports as prepared by A-V directors, and pick out their strengths and weaknesses. Of what value are annual reports to the A-V department director? Would you write them even if not requested to do so? Why, or why not?

SUGGESTED READINGS

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CHAPTER SEVEN

BUDGETING FOR AUDIO-VISUAL SERVICES

EVERY budget request submitted by a director of audio-visual services ought to be, for any given year, the wisest possible financial plan for the contribution of audio-visual services to instructional needs. Actually, as will be made clear later, the budget for any fiscal year ought to be only an annual segment of a long-term operational plan designed to reach goals of service which have been ascertained through painstaking cooperative study and analysis in terms of a local situation.

As he approaches his work on the budget, the director needs to keep in mind the obvious fundamental relationship between educational needs, costs involved in meeting needs, and financing. If, for example, teachers desire to include in the curriculum the learning experiences involving the production of models, slides, and motion pictures, or, if teachers themselves feel that they need to make graphic transparencies to communicate more effectively with their pupils, then the director must proceed to estimate the cost for the needed supplies and equipment. However, having determined the costs and having incorporated a request for a specific amount of money to purchase such needed materials in the next year's budget, there still remains the task of obtaining the required allotment of funds from his administrative superiors who, in turn, must obtain revenues from tax levies. If such requests for funds are denied, and if the director and his colleagues deem it necessary to do so, he may proceed to meet the new needs partially or fully by spending funds originally allotted for other purposes, he may obtain money from sources outside the school system, or he may have to put off further action on the problem until another opportunity presents itself to make an additional request for funds.

The main purpose of this chapter is to assist the director in making good decisions about budget preparation and administration. While these decisions demand good business sense, they are first and foremost a product of the ability to identify needs and the ability to plan to meet those needs at an optimum tempo.

DISCOVERY OF NEEDS AND DETERMINATION OF COSTS

In preceding chapters the audio-visual service program has been described in terms of materials, equipment, and assistance for improving the quality of learning experiences in the classroom. The central school-system audio-visual headquarters was pointed out as a pumping station with pipelines of service to each school and classroom where, in turn, subsidiary centers of service were operating to facilitate the work of teachers. The entire service program, insofar as budgeting procedures are concerned, may be looked upon as being temporarily arrested in its development, or locked into a position that can be altered only slightly, until a new fiscal year and a new plan of operation at a new and hoped-for higher level of support can be procured. This means that perceived needs can be fulfilled only when financial support makes possible the additional staff, materials, and facilities. Therefore the director must take steps to get the facts about needs, must determine the cost for meeting them, must decide how long it will take to reach desired operational levels of need-fulfillment, and must make his budget requests accordingly. This is the kind of cost determination that, by and large, is not done. Of course it is most discouraging to engage in an analysis of this sort only to find that funds have not been made available. However, there is no other good way of relating a current budget request to the long-range service goals. The director has no business in guessing. He needs to know how much the local service program will cost at any desired level of operation. An example, showing how this can be done, is given here.

Operational Levels and Their Costs. A hypothetical school system, (referred to as Town X) having 10,800 pupils housed in 15 school plants comprising a total of 360 classrooms, will suffice for a specific example of relating costs to definite service goals. Steps in such a process of cost determination, according to the recommended procedure, would be to:

1. Make a complete survey to determine the present status of facilities, equipment, and materials.
2. Ascertain needs for new services.
3. Establish priority for adding new services.
4. Establish operational levels based on (a) present status of staff and facilities; (b) improved status, that is, a "*desirable minimum level*" where each school has basic equipment units, a coordinator, and several projection rooms on call plus several darkened classrooms (in secondary schools, for example, such classrooms as shops, science, social studies and home economics); and (c) a ten-year-growth service level, that is, a "*high adequacy level*," where all classrooms have been equipped with darkening systems, screens, and outlets, and teachers rarely find it impossible to obtain the equipment needed upon request.
5. Tabulate data and project costs into the future for the following aspects of the service program: (a) purchase of facilities and equipment; (b) rental of motion pictures for schools; (c) purchase of materials to be distributed; (d) operating expenses, replacement; (e) operating expenses, servicing equipment units and materials; (f) operating expenses, production materials; (g) leadership and staff.
6. Formulate a system of installation cards for each school so that proper equipment and facilities will be scheduled for assignment to specific rooms and buildings in accordance with long-term plans.
7. Treat new construction as entirely separate, and either provide complete facilities and equipment at the time of construction or increase the regular budget sufficiently each year to provide for new buildings as well as the old.

In studying the procedure used in the subsequent example of cost determination, several assumptions and underlying conditions should be borne in mind. They are as follows:

1. Present inventories have arbitrarily been set up as reasonable for a school system that has not had the benefit of a centralized, vigorous, and unified service program.

2. The present centralized service organization has been in operation two years.

3. Buildings under construction have all the required audio-visual equipment and facilities included in construction allotments.

4. All the classrooms in old buildings ought to be equipped with darkening systems and double electrical outlets.

5. The purchases recommended are made generally in terms of widely accepted minimum standards.

6. Recommended services and operating procedures are based on commonly recognized needs.

7. Costs are expressed as rounded-off net prices prevailing in 1958. Since unit costs are clearly shown, adjustments may be made in any of the totals in terms of local situations. Tables 7–1 to 7–8, based on the above assumptions and conditions, show the costs in terms of major budget categories. Such categories are flexible, and recombination of totals are possible to fit other budget-category systems. Table 7–8 at the end of the series summarizes the cost determination according to the various operational levels specified.

8. A final assumption is that a complete survey has been made and that all desirable teacher participation in determination of needs and policy has been obtained.

Example 1: Cost Estimates for Town X

Equipment and Building Facilities: Table 7–1

A study of Table 7–1, along with some simple arithmetic, reveals that if the "Desirable Minimum" level is to be the goal, an immediate outlay of $32,190 for equipment and facilities will be necessary, or of course this outlay could be spread out over a number of years, using this operational level as an ultimate ten-year goal. On a per-pupil basis, to reach this level at once, the immediate outlay of $2.98 would be required. If the "Desirable Minimum" level could be reached at once and the "High Adequacy" goal were set up addi-

Table 7–1. Estimate of Cost for Audio-Visual Facilities and Equipment Based on the Specified Needs of Town X (10,800 Pupils, 15 School Plants, and 360 Classrooms) to Meet Two Operational Levels, Namely, an Immediate "Desirable Minimum" Level and a Long-Range "High Adequacy" Level.

Facilities and Equipment (a)	*Present Inventory* (b)	*Units Needed to Operate at D-M Level* (c)	*Buy at Once* (d)	*Unit Cost* (e)	*Cost to Reach D-M Level* (f)	*Units Needed to Operate at H-A Level* (g)	*Buy During Nine-Year Period* (h)	*Cost beyond D-M to Reach H-A Level* (i)
(1) Darkening Systems (in 5 Secondary schools: 160 classrooms)	20	45	25	$200	$ 5,000	160	115	$ 23,000
(2) Darkening Systems (in 10 elementary schools: 200 classrooms)	30	70	40	150	6,000	200	130	19,500
(3) Two, Double, Electric Outlets in Each Classroom (one at front, one at rear)	180	240	60	25	1,500	360	120	3,000
(4) Screens	30	70	40	40	1,600	300	230	9,200
(5) Projection Tables (or makeshift)	30	60	30	25	750	200	140	3,500
(6) Motion Picture Projectors	12	22	10	400	4,000	54	32	12,800
(7) Filmstrip Projectors	12	22	10	100	1,000	54	32	3,200

(8) *Slide Projectors (overhead with flashmeters)*	5	10	5	260	1,300	20	10	2,600
(9) Slide Projectors (standard)	10	15	5	100	500	25	10	1,000
(10) Vu-Graph Projectors	2	8	6	260	1,560	20	12	3,120
(11) Opaque Projectors	5	10	5	285	1,425	25	15	4,275
(12) Record Players	15	25	10	150	1,500	60	35	5,250
(13) Tape Recorders	5	20	15	200	3,000	40	20	4,000
(14) Still-Picture Cameras (35 mm.)	2	5	3	70	210	15	10	700
(15) Portable Public Address Systems	2	6	4	200	800	10	4	800
(16) Still-Picture Cameras (Polaroid Land type)	0	5	5	100	500	15	10	1,000
(17) Motion Picture Cameras	1	3	2	400	800	6	3	1,200
(18) Tape Recorders (special Hi-Fi)	0	1	1	745	745	4	3	2,235
(19) Television Receivers	0	0	0	350		15	15	5,250
TOTALS:					$32,190			$105,630

D-M and H-A refer to "Desirable Minimum" and "High Adequacy" operating levels.

tionally for the following nine-year period, then as shown in the table, $105,630 more would have to be spent. This would mean a per-pupil expenditure of approximately $1.09 each year after the "Desirable Minimum" level had been reached. It may be better in a given community to reach the "High Adequacy" level by spreading the cost evenly over a period of ten years from any given date. Thus if column (b) items are subtracted from column (g) items and the resulting figures are multiplied by the matching column (e) items, the total cost will become $137,820. In other words, add the cost to reach the "Desirable Minimum" level to the cost to reach the "High Adequacy," level. Now, dividing this by ten years and again by the number of pupils, 10,800, the per-pupil cost per year for the ten-year period becomes $1.28. It is obvious that the outlay of $2.98 at the start of a ten-year growth period would allow the school service to operate at a higher level throughout the intervening time. If it does nothing more, Table 7–1 reveals what the expression *long-term planning* really means, and also it should serve to point out that per-pupil cost figures and minimum-standards figures need to be applied to specific situations before budgets can be made up realistically. Table 7–2 deals with a different aspect of cost determination.

Example 2: Cost Estimates for Town X

Rental of Motion Pictures: Table 7–2

Table 7–2 shows that for Town X the cost for renting motion pictures could be in the neighborhood of $3,000 annually. On a per-pupil basis this would amount to approximately $0.28. Since increased availability of equipment and building facilities would increase the demand by teachers, the need for greater outlay for materials ought

Table 7–2. Estimate of Cost for the Rental of Motion Pictures for the 15 Schools of Town X

Schools	*Annual Outlay for Each School*	*Number of Schools*	*Total Annual Cost*
Senior High School	$700	1	$ 700
Junior High School	200	4	800
Elementary Schools	150	10	1,500
TOTALS:		15	$3,000

to be provided for in successive years. However, as the library of school-owned materials increases in size, the outlay for rented materials ought to decrease. Because the demand ought to increase steadily during the ten-year development period, the cost for rental of materials should at least be maintained at the proposed level. It would be reasonable to expect that after the ten-year goal for library materials had been reached, the outlay for rental materials would decline considerably.

Example 3: Cost Estimate for Town X

Purchase of Materials: Table 7–3

Table 7–3 gives a likely cost estimate for Town X for the purchase of audio-visual materials. Such materials would be centralized at the audio-visual center and distributed to all schools. In this table the same two operational levels for the acquisition of equipment and facilities should be noted.

As shown in Table 7–3, the necessary cost to bring Town X's audio-visual services program up to a "Desirable Minimum" operating level, insofar as owned materials is concerned, would mean an immediate outlay of $6,450. Beyond this, to reach the "High Adequacy" level, an expenditure of $97,200 over a nine-year period would have to be made. On a per-pupil basis this would require about $0.60 immediate outlay, to be followed by $1.00 for each pupil for each of the nine years following. Or spreading out expenditures evenly over the ten-year development period to reach the "High Adequacy" level, the per-pupil cost each year for the ten-year period would amount to $0.96, that is, for the purchase of materials alone. It should, of course, be noted that models, exhibits of realia, maps and globes, and charts are not included in this example of cost determination. The effect of further expansion of the services rendered on the cost would be obvious. Other cost estimates for operating expenses and materials for production activities are given in Example 4.

Example 4: Cost Estimates for Town X

Operating Expenses (Replacement of Equipment): Table 7–4

Replacement policies the country over are inadequate, and the negative influence of such failures on the entire program of service is

Table 7–3. **Estimate of Cost for the Purchase of Materials for the Audio-Visual Services Program of Town X**

Materials	*Present Inventory*	*Units Needed to Operate at D-M Level*	*Buy at Once*	*Unit Cost*	*Cost to Reach D-M Level*	*Units Needed to Operate at H-A Level*	*Buy During Nine-Year Period*	*Cost beyond D-M to Reach H-A Level*
Motion Pictures	40	100	60	$70	$4,200	1,200	1,100	$77,000
Filmstrips	300	500	200	4	800	4,000	3,500	14,000
Recordings (Disk and Tape)	100	200	100	3	300	600	400	1,200
Slide Units	20	50	30	15	450	250	200	3,000
Study Print Sets	60	200	140	5	700	600	400	2,000
TOTALS:					$6,450			$97,200

D-M means "Desirable Minimum" level, and H-A means "High Adequacy" level.

Table 7–4. Estimate of Cost for Replacement of Audio-Visual Materials and Equipment Owned by Town X, in Terms of Two Operational Levels Described in Tables 7–2 and 7–3

Equipment and Materials	*Starting Inventory* (1)	*D-M Level Inventory Next Year* (2)	*H-A Level Inventory at end of Ten Years* (3)	*Replacement Estimate Annually for Starting Inventory Basis* (4)	*Replacement Estimate Annually for D-M Inventory Basis* (5)	*Replacement Estimate Annually During Nine-Year Devel. to H-A Level* (6)	*Adjusted Replacement Estimate During Ten-Year Devel. to H-A Level, from Col. (1)* (7)
Motion Picture Projectors	12	22	54	$ 480.00	$ 800.00	$ 880.00	$ 800.00
Filmstrip Projectors	12	22	54	60.00	110.00	120.00	110.00
Record Players	15	25	60	225.00	375.00	390.00	375.00
Tape Recorders	5	20	40	100.00	400.00	450.00	400.00
Still Cameras	2	10	30	10.00	50.00	60.00	50.00
Motion Picture Cameras	1	3	6	20.00	40.00	50.00	40.00
Projection Tables	30	60	200	90.00	125.00	150.00	125.00
Screens	30	70	300	200.00	200.00	220.00	200.00
Film Subjects	40	100	1200	100.00	200.00	220.00	200.00
Filmstrips	300	500	4000	120.00	100.00	110.00	100.00
Recordings	100	200	600	50.00	50.00	60.00	50.00
Study Print Sets	60	200	600	20.00	80.00	85.00	80.00
TOTALS:				$1,475.00	$2,530.00	$2,795.00	$2,530.00
Per-Pupil Cost:				$ 0.14	$ 0.23	$ 0.26	$ 0.23

D-M and H-A refer to the "Desirable Minimum" and "High Adequacy" operating levels. In columns (4), (5), (6), and (7), replacement estimates for each budget condition are given. Some of these figures will be used in later summaries of cost.

so severe that appropriate action ought to have a high priority. Table 7–4 gives some guidance in setting up better budgetary provisions. In some localities replacement expenditures will have to be categorized under new equipment purchases, or capital outlay. Regardless how this is determined locally, the amounts in Table 7–4 may easily be added to the cost for equipment and facilities or kept separate, as in this example. It should be noted that only major items are considered for replacement estimates. The condition of local equipment and materials must be known before best judgments can be made. The basic assumptions underlying replacement estimates for materials is that the life-expectancy is ten years and that purchases have been made at different times, thus providing items of mixed ages. Other assumptions are that some types of equipment do not wear out so fast as others and that normal servicing extends life expectancy. Column (7) in Table 7–4 needs to be expressed in greater detail for local purposes, depending upon the number of equipment units purchased; space does not permit this kind of treatment. Hence in this column the figures are adjusted averages, taking into consideration columns 1, 3, 4, 5, and 6.

Example 5: Cost Estimates for Town X

Operating Expenses (Servicing Equipment and Materials): Table 7–5

Table 7–5 takes into account the fact that in the hypothetical example, Town X, a maintenance technician is on the audio-visual center staff; hence service costs, especially on motion picture projectors, are much less than they otherwise would be. Estimates include spare parts, tubes, lamps, belts, and some special repair work by outside agencies; also included are replacement footage, film cement, cleaning fluid, and leader film.

Table 7–5 also shows that costs for servicing materials depend upon the size of the inventory. Servicing as an aspect of the audio-visual program must be analyzed in terms of the local operational levels, and the reader should note that repair costs by outside agencies are represented in Table 7–5 only to a slight percentage because a technician is to be included in the staff costs, as will be shown in a later table. Were this not the case, unit service charges expressed

Table 7–5. Estimate of Cost for Service to Audio-Visual Equipment and Materials Owned by Town X

Equipment and Materials	*D-M Level Inventory* (1)	*H-A Level Inventory* (2)	*Average Annual Outlay for Service on Each Unit* (3)	*Annual Outlay at D-M Level* (4)	*Annual Outlay at H-A Level* (5)	*Adjusted Annual Outlay during Rise to H-A Level* (6)
Motion Picture Projectors	22	54	$10.00	$220.00	$ 540.00	$ 220.00
All Other Projectors	65	114	6.00	390.00	684.00	340.00
Tape Recorders	20	40	4.00	80.00	160.00	80.00
Record Players	25	60	4.00	100.00	240.00	120.00
Screens	70	300	0.50	35.00	150.00	75.00
Motion Pictures	100	1200	1.00	100.00	1,200.00	600.00
TOTALS:				$925.00	$2,974.00	$1,435.00
Per-Pupil Cost:				$ 0.09	$ 0.27	$ 0.13

D-M and H-A refer to the "Desirable Minimum" and "High Adequacy" levels of operation.

in Table 7–5, especially for motion picture projectors, tape recorders, and record players in column (3), would have to be changed to $25, $12, and $10, respectively, as minimum estimates.

Example 6: Cost Estimates for Town X

Production Materials: Table 7–6

As in other tables in this series, the annual costs for production materials are expressed as average costs. When equipment units become increasingly available in terms of expanding inventories, demands for supplies increase; however, for purposes of this example, an average cost estimate is satisfactory. Directors having up-to-date information about demands will need to prepare a table projecting each year's costs so as to be ready to make up an accurate budget request at any time.

Example 7: Cost Estimates for Town X

Leadership and Staff: Table 7–7

For the purpose of this cost-determination example, it is not essential to include in the staff cost the specific annual increments for each staff member. It should be assumed that the usual raises are reflected in the salary figures that are stated as averages. School coordinators are also indicated as staff members, and their annual bonus payments are properly included. In many cases such payments are considered as chargeable to instruction only. In this example, released time is not pro-rated in terms of salary, but such monetary payments as are given appear in Table 7–7 which also reveals the nature of the staff organization as suggested for Town X.

Example 8: Cost Estimates for Town X

Other Operating Expenses: $1,200, or $0.11 per pupil

In the foregoing tables, certain items have been omitted. This is partly due to the desire to emphasize major aspects of cost determination in tabular form. At desirable levels of organization and operation, several additional items of expense must also be considered. Items such as maintenance-shop equipment, film splicers, film cleaners, office equipment, and the delivery truck have not been

Table 7–6. Estimate of Cost for Audio-Visual Production Materials for the Schools in Town X

Materials Needed	*Allotment to Ten Elementary Schools*	*Allotment to Four Junior High Schools*	*Allotment to the Senior High School*	*Estimate of Average Annual Cost*
Etched glass, Masks, Cover Glass, Crayons, Binding Tape, etc.	$200	$ 70	$ 60	$ 330.00
Magnetic Recording Tape	100	80	60	240.00
Plastic Sheets and Paper Mounts	20	60	120	200.00
Assorted Film Stock: Still, Motion, and Polaroid Land Types	60	100	60	220.00
Picture Mounting Materials	60	40	20	120.00
TOTALS:	$440	$350	$320	$1,110.00
Per-Pupil Cost:				$ 0.10

Table 7–7. Estimate of Average Annual Cost of Leadership and Staff Members for the Audio-Visual Services Program in the Schools of Town X

Staff Member	*Audio-Visual Center*	*Ten Elementary Schools*	*Four Junior High Schools*	*Senior High School*	*Totals*
Director	$ 8,000				$ 8,000.00
Full-time Technician	4,800				4,800.00
Full-time Coordinators				$6,000	6,000.00
Part-time Coordinators		$2,000 ($200 each)	$1,200 ($300 each)		3,200.00
Full-time Secretaries	2,700				2,700.00
Part-time Workers (Student or adult)	1,000		600	500	2,100.00
TOTALS:	$16,500	$2,000	$1,800	$6,500	$26,800.00
Per-Pupil Cost:					$ 2.48

previously included in the servicing operation. The presence of such equipment items at the center can be assumed, but to make the example more realistic, the items of *mimeographing, printing, office supplies*, and *travel*, as recurring costs, must be indicated. In an operation such as described in Tables 7–1 through 7–7, the average annual cost of these four items may well be in the neighborhood of $1,200. On a per-pupil basis, this cost would amount to approximately $0.11. This item will thus also appear with other data from the preceding tables in the summarization in Example 9.

Example 9: Cost Estimates for Town X

The Summary: Table 7–8

Table 7–8 puts the various specific cost estimates together into a summary that gives a general idea of what an audio-visual services program would be likely to cost for a city of 10,800 pupils, having fifteen school plants, and having an inadequate inventory to begin with, but having the desire to undertake an organized, vigorous effort to get somewhere in the audio-visual services area. The column headings of this table indicate the kinds of cost estimate for which itemizations in other tables are available. It should also be noted that cost estimates in this table are not to be considered as complete, since many budgetary items such as insurance, office supplies, outside speakers for in-service education, and repair materials are not included.

Some Questions about the Examples for the Reader. As the reader studies the preceding examples of cost determination, he needs to keep a number of troublesome points in sharp focus. Getting the answers to the following questions will provide some insights for correct thinking:

1. How does the present inventory in a school system affect developmental costs?

2. How are desirable operational levels for a particular system determined? By statements of national minimum standards? By the local instructional demands of teachers? As a result of the promotional work of the director? By the principals? By the director himself?

3. What can be done to "hide" the costs of operating an audio-visual services program? Could room-darkening costs be "hidden" in

Table 7–8. Summary of Cost Estimates for the Audio-Visual Services Program for the School System of Town X, Having 10,800 Pupils Housed in Ten Elementary Schools, Four Junior High Schools, and One Senior High School (Figures are Given in Total Expenditures and in Per-Pupil Units)

Service Aspects	*Total Outlay to Reach and Operate at D-M Level Immediately*	*Total Outlay To Reach H-A Level*	*Annual Outlay to Reach and Operate at D-M Level in 10 Years*	*Annual Outlay while Reaching H-A Level Beyond D-M Level in 9 Years*	*Annual Outlay to Reach and Operate at H-A Level in 10 Years*
(1) Equipment and Facilities (see Table 7–1)	$32,190 ($2.98)	$137,820 ($12.76)	$ 3,219 ($0.30)	$11,737 ($1.09)	$13,782 ($1.28)
(2) Rental of Motion Pictures (see Table 7–2)	3,000 ($0.28)	3,000 ($ 0.28)	3,000 ($0.28)	3,000 ($0.28)	3,000 ($0.28)
(3) Purchase of Audio-visual Materials (see Table 7–3)	6,450 ($0.60)	103,650 ($ 9.60)	645 ($0.06)	10,800 ($1.00)	10,365 ($0.96)
(4) Operating Expenses; Replacement (see Table 7–4)	2,530 ($0.23)	2,530 ($ 0.23)	2,530 ($0.23)	2,795 ($0.26)	2,530 ($0.23)

(5) Servicing Equipment and Materials (see Table 7–5)	925 ($0.09)	2,974 ($ 0.27)	925 ($0.09)	1,435 ($0.13)	1,435 ($0.13)
(6) Production Materials (see Table 7–6)	1,110 ($0.10)	1,110 ($ 0.10)	1,110 ($0.10)	1,110 ($0.10)	1,110 ($0.10)
(7) Leadership and Staff (see Table 7–7)	26,800 ($2.48)	26,800 ($ 2.48)	26,800 ($2.48)	26,800 ($2.48)	26,800 ($2.48)
(8) Operating Expenses; Other Aspects	1,200 ($0.11)	1,200 ($ 0.11)	1,200 ($0.11)	1,200 ($0.11)	1,200 ($0.11)
TOTALS and Per-Pupil Costs	$74,205 ($6.87)	$279,084 ($25.84)	$39,429 ($3.65)	$58,877 ($5.45)	$60,222 ($5.58)

D-M and H-A refer to "Desirable Minimum" and "High Adequacy" operating levels. Readers should note that rows (2), (4), (5), (6), (7), and (8) are made up of average estimates, and hence they are fairly constant. In actual practice, these expenditures would vary considerably over a ten-year growth period.

maintenance department budgets? Could coordinator monetary payments be "hidden" in school-building salary budgets? Could delivery costs be "hidden" in school-system trucking services?

4. Can per-pupil cost figures in one town be compared with per-pupil cost figures in another to form critical judgments? If not, why not? What does starting status have to do with this comparison? What does the pupil enrollment have to do with it? What would number and size of school plants have to do with it? What would the number of years that the program has been operating under good leadership have to do with it?

5. What advantages will accrue to the director who puts forth the effort to plan expenditures to reach long-term service goals?

6. Insofar as Table 7–7 is concerned: (a) Is it likely that the "Desirable Minimum" level could be reached at once? If this level had to be reached over a long period of time, ten years, for example, what upward revisions ought to be made in the item for purchase of materials? What cut-backs in the staff item? (b) What would be the advantage of reaching a "Desirable Minimum" level as soon as possible and then proceeding to the "High Adequacy" level over a ten-year expenditure plan?

OBTAINING FINANCIAL SUPPORT

Upon the director rests the responsibility for a penetrating analysis of needs and the vigorous pursuit of adequate financial support to meet those needs. This is a complex responsibility, however, because it involves the matter of balance. Schools need many service agencies, higher salaries, and ample supplies, and into this web of local circumstances the director must direct his steps to request and obtain the needed support in optimum amount for the good of all concerned. To be sure, he need not stand alone in making such requests because allotments for his services are spread out over the entire instructional program. Thus school principals, teachers, and other curriculum specialists can be of real help in substantiating and formulating the requests to be submitted. Special budget-preparation study groups and the director's advisory committee, if he has one, ought to make significant contributions to the formulation of sound recommendations.

While this section is related directly to Chapter Ten, Public Understanding and Support, it is also related to cost determination and budgeting procedures. Success in obtaining financial support is vital, and although every support problem must be met in local terms, some general suggestions will be helpful.

Having Needs, Goals, and Costs in Mind Is Urgent. Knowing what needs have to be met, having definite operational goals in mind, and having a long-term plan formulated, as was indicated in the example of cost determination of the preceding section, are the first and foremost bases of success. Having tabulated data in terms of operational needs, and having a cost-analysis plan at hand carry the authority of facts. The long-term planning possible when the facts are at hand is recognized everywhere as good business, and the recognition of prudent management is sure to build up the director's reputation in the public view. Guessing and predicting what would be good to do with the money if it were provided is the other alternative, and everyone knows this is not good common sense.

Minimum Standards Information Is Useful. In preparing long-term development plans, and in presenting information to administrative officials and the public, authoritative statements representing national thinking are useful. Local considerations of equipment needs; size, number, and location of buildings; and curriculum needs must, of course, be the final determiners of desired status. The following statements, however, carry a great deal of weight as ammunition for vigorous appeals:

1. *The Audio-Visual Commission on Public Information.*[1] This statement was formulated in 1956 and is as follows:

Equipment (Basic Minimum)

(a) 16-mm Sound Projectors: 1 per 300 students or major fraction thereof; at least one for each building.

(b) Filmstrip and 2 x 2-inch Projector: 1 per 200 students or major fraction thereof; at least one per building.

(c) Opaque Projector:* 1 per building.

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[1] By permission. From Horace C. Hartsell and Charles A. Norford, "Selecting Equipment or Steve's Problem," *Audio-Visual Instruction*, Vol. 1, Issue 6, November, 1956, p. 174. AVCOPI maintains its headquarters at Room 2230, 250 West 57th St., New York 19, N.Y.

(d) Record Players (3 speed): 1 per first school-year class; 1 per five other classrooms; at least 2 per building.

(e) Tape Recorders: 1 per 300 students or major fraction; at least one per building.

(f) AM-FM Radio and TV All Channel Receivers: (Where appropriate program materials are available) 1 radio per five classrooms; at least 2 radios per building; at least 1 TV set per building.

(g) Overhead Projector* (7″ x 7″ or larger): 1 per building.

(h) Screens (60″ x 60″ or larger): 1 per each 2 classrooms.

Light Control (Basic Minimum)

Some device or method must be used in each classroom to reduce the light sufficiently for satisfactory projection.

Personnel (Basic Minimum)

Someone must be made responsible for the audio-visual program in each building. This person must be given sufficient released time during school hours to do a professional job.

* One of these must be equipped to handle 3¼ x 4″ slides.

2. *State of Indiana Department of Education Standards for Audio-Visual Education:*[2] This comprehensive statement, prepared and published in 1956, is summarized as follows: For every 300 pupils there should be a 16-mm sound motion picture projector and a tape recorder, a combination filmstrip and 2-inch slide projector, a 7-inch by 7-inch overhead transparency projector; for every 100 pupils there should be provided a record player and a radio; and for every 600 pupils, an opaque projector, and a 3¼-inch by 4-inch lantern slide projector. At least one of each of the above equipment units ought to be in every school building, together with a portable public address system, enough screens to meet the needs of all teachers, and a movable equipment stand for each piece of heavy equipment. Regarding financial support, it is indicated that desirable programs will require $4.00 to $6.00 per pupil for materials and equipment.

3. *American Council on Education Recommendations:*[3] These recommendations were stated in 1944 as minimum goals for supplying equipment, and have been widely quoted since. They are summarized

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[2] *The Audio-Visual Program*, State of Indiana, Department of Education, Indianapolis, Indiana, 1956, pp. 120–121.

[3] Helen Hardt Seaton, *A Measure for Audio-Visual Programs in Schools*, American Council On Education, Washington, D.C., 1944, pp. 36, 40.

as follows: For every 200 students a 16-mm sound projector, a filmstrip projector, and a record player should be provided; for every 400 students, a 3¼-inch by 4-inch lantern slide projector; and at least one of these named equipment units, together with an opaque projector and a public address system, should be provided for each building. These recommendations also call for a wall-type screen in every classroom. Under financial support recommendations, it was suggested that 1 per cent of the annual per-pupil cost should be considered as a minimum operating figure for the audio-visual program.

4. *Recommendations of a National Committee of Fourteen:*[4] While this committee split up its recommendations into three levels, rural, small urban, and large urban, a selective summary will reveal some of the main standards that were suggested in 1948: A 16-mm sound projector and an opaque projector ought to be provided for every ten classrooms (with an opaque projector on each floor); and a 3¼-inch by 4-inch slide, a 2-inch by 2-inch slide, and a filmstrip projector, together with a record player and a radio (where programs were regularly available), ought to be provided for every five classrooms. This committee further recommended that at least one of the equipment units just mentioned be provided in each school building; that a sound recording device be provided for every twenty-five classrooms; that all classroms where projected materials were needed should be equipped with wall-type screens, darkening systems, two, double, electrical outlets, and an additional light-control switch at the rear of the room; that classroom bulletin boards be provided in the amount of one-third eye-level wall space; that slide-making equipment be in every classroom; that every high school be provided with a microprojector; and that every high school ought to be provided with a photographic laboratory for use by teachers and camera clubs.

Brooker's[5] answers to questions regarding classroom needs and budgeting for the instructional materials program also provide valuable estimates. The questions and excerpted answers follow:

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[4] "Audio-Visual Program Standards, Part 5, Equipment and Building Facilities," *See and Hear*, Vol. 3, Issue 5, January, 1948, pp. 17–19.

[5] Floyde E. Brooker, "How Can We Coordinate Our Instructional Materials Program?" *Summary Report, Iowa State Conference on School Planning for Use of Instructional Materials, April 23–24, 1956*, State University of Iowa Extension Bulletin No. 718, State University of Iowa, Iowa City, Iowa, 1956, pp. 10–11.

Q: *What is needed in the modern classroom?*

A: I claim that no classroom can be called an effective instrument of instruction unless you can control the light down to one-tenth of a footcandle. . . . You should have for every 200 students a motion picture projector and an overhead projector, two filmstrip-slide combination projectors, wall screens in every room, at least one tape recorder and one radio, at least one opaque projector and all the maps, charts and globes which are needed. You also need roll-away stands for equipment. This I submit to you as a minimum list for each 200 students.

Q. *What should be the budget for the instructional materials program?*

A. I would like to suggest a minimum of $2.50 per student for materials and equipment, not including staff. Some place between $2.50 as a minimum and $7.50 (1 to 3 percent) should provide the necessary materials. . . . I would also say that 2 percent of the per classroom cost . . . would provide all the basic equipment necessary for an elementary school and would also provide all the light control.

While having and using such information will strengthen his hand, the director ought to take a penetrating look at local conditions and mobilize his own pertinent information, based upon long-term costs, to reach predetermined levels of operational efficiency.

Adequate Records of Service Rendered Are Useful. In the preceding chapter the value of adequate service records was stressed, and the director was urged to develop a system for maintaining these records. Such information, when properly organized and presented, supplies the facts for sound judgment.

Being Clear on Who Should Pay Is Essential. The audio-visual service program, except as otherwise provided for by state-supported educational-equalization legislation, should be paid for out of regular school department funds. Any other "partial support" basis by civic groups, such as school parent-teacher organizations, delays the day of meeting the issue squarely. In 1949, a study[6] by the U.S. Office of Education revealed that approximately 47 per cent of all the motion picture projectors then in public high schools were purchased with nontax funds. This is to be expected with financial support being as low as it has been and still is in terms of the national average, as witnessed by the following statement in a national survey report,[7] ". . . the conclusion is clear: support for audio-visual education was and is a pittance."

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[6] Seerly Reid, *Movie Projectors in Public High Schools*, Pamphlet No. 109, U.S. Office of Education, Washington, D.C., 1950, p. 11.

Directors of audio-visual services ought, as a matter of policy and firm conviction, to channel their major effort to win financial support through local tax funds. This means that they will at every opportunity urge interested PTA groups and other civic organizations to go on record as favoring new over-all school administration support policies, and if necessary, cast their ballots for an increase in the tax rate. This is the way to provide the continuing financial support so necessary to a firm and desirable operating level. After all, a benefit bridge or a school cake sale, despite its good spirit, is a pitifully weak gesture as it affects the program of the next decade. However, many a director has used the donation of a film, a projector, or a drape-traverse system as a publicity item to open the door to more desirable support efforts by all segments of the community. Whenever the director seeks, identifies, and succeeds in tapping other than regular tax-fund allotments, such income ought to go properly to the chief administrative officer for subsequent transfer to the audio-visual services budget.

BUDGET PREPARATION

It has already been stated many times that the basis for any particular procedure is the long-term plan to meet definite instructional needs, and that the particular kind of budgeting system in operation must reflect such thinking and planning throughout its preparation. From the point of view implicit in this chapter, the director obtains financial support on the basis of a budget request in which he states his monetary needs succinctly, supporting such request by forceful means. It is with the format for organizing and formulating the budget that this section is concerned because the way in which the budget is laid out is not only important in the light of obtaining optimum financial support but facilitates as well the later work of budget administration. If the quality and scope of the local A-V service program is to be clearly seen, all expense items from in-service education to fire insurance ought to be included.

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[7] "Audio-Visual Education in Urban School Districts 1953–54," NEA *Research Bulletin*, Vol. 33, No. 3, October, 1955, pp. 119–120.

Budget Categories and Format. Many variations exist in the manner in which budgets are set up, but the basic procedures are similar. A detailed budget breakdown is preferable, and a director should seek guidance from school administrative officials as to prescribed budget categories and the degree of detail that is necessary. Basically and simply, every budget ought to show (1) in itemized form the predicted total income from all sources, and (2) in detailed form under locally standardized categories, with which all involved are familiar, the ways in which this income is to be disbursed.

The director needs to make sure that sufficient details appear in his budget system to show his organizational patterns and operational plans, and this can be guaranteed under almost any classification system. For example, the writer's own budgeting format is, of necessity, based upon a state-wide system, using four funds as follows: personal services, contractual services, supplies, and capital outlay. Typical variations are shown in the following examples: Under the Instructional Materials Center item in a 120-page, mimeographed, metropolitan, school-system budget book, the following main headings appear: salaries, consumable supplies, materials, maintenance of equipment, capital outlay, and other expenses. Under the last category were included such items as fidelity bonds, mileage, telephone, and gasoline. A simple three-category system is suggested by Noel[8] as follows: (1) salaries and wages, (2) operating expenses, and (3) capital outlay.

Major differences are almost sure to appear in audio-visual service budgets, and these are understandable, since they are determined by local policies and in some cases by state law. These principal differences in procedure are implicit in the following questions, which should be noted and checked by the director against the policies set up by school-system officials.

1. Should expenditures for motion pictures, filmstrips, models, etc., be chargeable against capital outlay, or operating expense funds?

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[8] Francis W. Noel, "Administering Audio-Visual Programs," *Audio-Visual Materials of Instruction*, 48th Yearbook of the Society for the Study of Education, Part I, University of Chicago Press, Chicago, 37, Illinois, 1949, p. 199.

2. Should expenditures for new equipment units be chargeable to a different account than materials, or should both items be charged against capital outlay?

3. Should expenditures for replacement of equipment and materials be chargeable to separate accounts? To the operating expense fund? To the capital outlay fund?

As has already been indicated, audio-visual budget planners may not have the opportunity to answer these questions according to personal preferences because the terms *capital outlay* and *supplies*, while they do not seem difficult to understand and apply, give rise to a wide variety of operational procedures. *Capital outlay* in the writer's budgetary situation applies to the cost for land and nonstructural improvements to land, the cost for equipment such as tools and machinery, vehicles, and items of apparatus, all of which have to be reported in the annual inventory; and it applies also to the cost for buildings and improvements. The term *supplies* refers to all commodities and materials, including consumable items that are not carried on the inventory of fixed assets. Equipment replacements must, according to this system, be considered as new equipment and must be budgeted accordingly.

Differences in various systems of interpretation are certain to be accompanied by unique systems of classification. One school superintendent reported a rule of thumb long used in cases of doubt for differentiating between supplies and capital equipment. He said that if the item had a useful life of less than two years, it ought to be listed among supplies, and in case it was two years or over, it should be considered as capital equipment. Thus, in a great many cases, the director has no choice but to present his budget requests in terms of local specifications. However, if it is desirable, he may then organize an expenditure budget based upon his formal advice-of-allotment and his guaranteed income to suit his own convenience and record-keeping system. An example of budget format is now presented to show how diversified expenditures for audio-visual services may be classified. It should be noted that the preceding questions regarding variations in classifying expenditures for materials, equipment, and replacement have been answered for this example only. Many other systems of classification are in use.

Example

Budget Format Details

BUDGET FOR AUDIO-VISUAL SERVICES
PUBLIC SCHOOLS OF TOWN X

Fiscal Year ______

Appropriation Account Number ______

Summary of Appropriation:
Personal Services Fund ______
Contractual Services Fund ______
Supplies Fund ______
Capital Outlay Fund ______

Total: ______

Estimated Income, if Any, from Other Sources:
Parent Teacher Organizations ______
Community Service Clubs ______
Business Firms ______
Donations and Drives ______

Total: ______
Grand Total: ______

PLANNED DISBURSEMENTS

Personal Services Fund: Total ______

	Budget Previous Year	*Increase or Decrease*	*Budget Current Year*
Director	______	______	______
Coordinator (SHS-1)	______	______	______
Coordinator (JHS-4)	______	______	______
Coordinators (El-10)	______	______	______
Chief Technician	______	______	______
Secretary	______	______	______
Part-Time Workers (Hqts.)	______	______	______
Part-Time Workers (SHS)	______	______	______
Consultants and Speakers for In-Service Ed.	______	______	______

Contractual Services Fund: Total ______

(a) General Repair Jobs and Contracts (daily, weekly, or annually) ______ ______ ______

(b) Rental of A-V Materials Allotted to: ______ ______ ______

10 Elem. Schs. ______ ______ ______

4 JH Schs. ______ ______ ______

1 SHS ______ ______ ______

Headquarters ______ ______ ______

(c) Cartage ______ ______ ______

(d) Printing, Binding, and Mounting ______ ______ ______

(e) Magazine Subscriptions ______ ______ ______

(f) Memberships and Dues ______ ______ ______

(g) Mileage Reimbursement (Local School System) ______ ______ ______

(h) Travel Expenses (out of city only) ______ ______ ______

(i) Fire and Theft Insurance on Materials and Equipment (also tel., light, heat, etc., if necessary) ______ ______ ______

(j) Photo Laboratory Service Charges ______ ______ ______

Supplies Fund: Total ______

(a) Office Supplies (printed forms, mimeo and other duplication, stationery, envelopes, postage, etc.): ______ ______ ______

(b) Repair and Maintenance Supplies (spare parts of all kinds, lamps, electronic tubes, film leader, chemicals, etc.): ______ ______ ______

(c) Educational Supplies (expendable production supplies of all kinds, manuals, and laboratory supplies for training purposes): ______ ______ ______

Capital Outlay Fund: Total ______
(a) New Equipment Units ______ ______ ______
(b) New Titles of A-V Material ______ ______ ______
(c) Replacement of Equipment ______ ______ ______
(d) Replacement of Materials ______ ______ ______
(e) Storage Facilities ______ ______ ______
(f) Office Equipment ______ ______ ______
(g) Delivery Equipment ______ ______ ______
(h) Maintenance Equipment ______ ______ ______
(i) Building and Remodeling ______ ______ ______

Having analyzed the foregoing classification system, it can be readily seen how major decisions reached in an over-all cost determination, an example of which was set forth earlier, can influence budget preparation, presentation, and administration procedures for a decade or more. However, the prospective director needs to give careful consideration to some other budget policies, a discussion of which follows.

To Pad or Not to Pad the Budget. It has already been pointed out that cost determination in terms of instructional needs and long-term plans to reach desirable operational levels is the vital method by which a director ought to prepare his budget requests. Prudent management and clear thinking call for factual justification for every dollar requested and every dollar spent. The director ought to describe clearly for the authorities and the public what the status of his organization is, what services they can expect under this status, and what is clearly needed in terms of the facts. Once the facts are presented and the proper recommendations made, the responsibility shifts to those who have the final decision. Hence, attempts should not be made to obtain desired allotments of funds by overstating the amounts needed in anticipation of probable cuts.

To Hide or Not to Hide the Cost. Repeatedly in the literature, cost figures and recommended standards for expenditures exclude leadership and staff, as though an audio-visual service program consisted only of materials, equipment, and building facilities. This must mean that leadership and staff costs are being hidden from view, that is, they are either being subsumed under over-all instructional and administrative headings as a policy, or they are not being properly considered. Those who recognize the organizational aspects of an audio-visual service program will realize that appropriations cannot be hidden for long.

Some would advance the idea that financial support is easier to attain if the salary of a director of a proposed audio-visual service program is added to the supervisory budget, raising it, for example, from $175,000 to $184,000. The idea may also be advanced that it would be easier to obtain money for A-V materials if their cost were included with that of textbooks. For example, in one city, had this been the case, the addition of the cost of audio-visual materials would have increased the total appropriation for textbooks and A-V materials from $303,000 to $333,000. These same proponents of hiding the costs point out that in an open-type departmental budget statement, a salary item of $9,000 and an item of $30,000 for audio-visual materials provide an inviting target for school-critic sharpshooters. Regardless of how the matter is settled locally, and although this may be a matter of firm local or state policy, the director must conduct his long-term, goal-reaching budgeting by putting his plans on paper as a basis for recommendations, and, as has been said, by identifying and justifying service needs. Adequate support for any operation needs to be on a firm basis, and the people will not be fooled for long. Hiding costs deliberately as a strategem may prove to be a dangerous business. If it is done at all, it had better be substituted quickly by an educational program designed to let the people decide what kind of instruction they really want. The director should be guided accordingly as he finds the best local solution for this budgeting problem.

Allotting A-V Funds to Schools. In the cost-determination example presented in this chapter, there were ten elementary schools and four junior high schools. In a decentralized program of renting motion pictures and other materials, the question of a fair allotment of funds comes up. A problem exists, of course, only when the funds for this purpose are insufficient to meet the demands, since in this event they have to be divided. Possibilities include dividing the appropriation equally among schools of each type, making allotments on a per-pupil basis, making allotments on a per-teacher basis, and making allotments in terms of democratic action in the light of a particular instructional program. This latter suggestion, although more difficult to implement, is the recommended line of decision. Democratic action may be taken by means of calling for requests from coordinators, of sending out and collecting quick-response survey sheets, and of guiding a committee of coordinators to arrive at a wise decision.

Factors such as urgency of need, priority for specified subject-matter fields, priority for direct instruction over entertainment, priority for materials keyed directly to problems and units, and priority for basal over supplementary materials may have to be balanced to set up the first schedule. Factors such as those just mentioned suggest that there may be little justice in uniform allotments. It is also suggested that a reserve fund for this purpose be set up for the balance of a school year, to handle special needs, and further, that a stipulation be made to the effect that all funds be allotted subject to encumbrance for expenditure by a specified date, thus in effect providing for a second division and allotment of unexpended funds.

Administering the Budget. While extensive budget-accounting systems set up by the director are likely to duplicate similar activities in central administrative offices, the director should establish a system that will provide a double-check on expenditures. A simple ledger in which expenditures may be entered, showing weekly or monthly balances, is suggested. When mistakes occur outside the audio-visual headquarters, this system will show them up.

The director should never assume that financial reports distributed from central offices are correct. He needs to study them with care, setting up a pattern of habitual scrutiny against mistakes in encumbrances and payments. Naturally, if he finds that he has been awarded unwittingly an additional $10,000, he will call this to the attention of the business manager. However, the anguish over a situation of that sort is equalized by the pleasure derived by discovery, in time, of an incorrect encumbrance that, having gone unnoticed, would have caused serious fiscal trouble at the end of the year. Four other aspects of budget administration that need serious attention are:

1. *Switching Funds*. In certain budget systems no leeway exists for the director in switching funds from one account to another. In

other systems, as long as the appropriation in any given fund is not exceeded, the director may switch charges from one account to another account within the coverage of the fund itself. That is, a printing account could in some cases be combined with a repair account or a film rental account under a main fund like an Operating Expense Fund. Such switching provides flexibility and often makes possible the complete spending of appropriations.

2. *Following the Budget.* Once a plan of expenditures has been set up and approved, the director is committed to a controlled line of action. To change it, except for emergencies or unpredictable circumstances, is to admit lack of foresight. As a matter of policy and for the sake of good management, the director should see to it that he himself as well as his staff adheres to an agreed-upon plan. Stability of program and an enhanced reputation in business matters are bound to accrue from such responsible and dependable administration.

3. *Contingency Budgeting.* Not to be confused with padding the budget, contingency budgeting is the device employed to take care of emergency needs arising beyond the control of the budget planner. Such provisions could, of course, exist unknown to the director of audio-visual services, and it is up to him to discover these or to take steps to protect his program. The director should, of course, protect his contracts by a 10 per cent specification in his budget to apply to such matters as printing, film rental accounts, and repair work. Also, in cases of equipment, the director may either specify a definite contingency amount under capital outlay or arrange to specify fewer equipment units than planned when an order is actually issued, or he may call for quotations in terms of several levels of quantity. Price-rise contingencies or other unpredictable events need, at any rate, to be borne in mind in both budget preparation and budget administration.

4. *Readiness for Windfalls.* Directors who are unprepared for fast action never are in the position to profit by "windfalls." In terms of priority needs for either equipment or materials, or both, special purchase lists should always be in readiness for immediate requisition and delivery. Unspent funds, left over from other appropriations, often are awarded suddenly and unexpectedly to a department that has already demonstrated worthy needs, can place orders immediately, and can guarantee delivery within desirable time limits. Directors

should go after such funds, and they should be able to demonstrate their readiness to take effective action without fail. A windfall, perhaps one of tremendous significance, may come but once.

SUGGESTED ACTIVITIES

1. Just how much participation by other people should be sought in budget preparation? Describe a plan for such participation that you believe would be effective.

* 2. Following the example of cost determination presented in this chapter, make a survey of the present inventory of audio-visual materials and equipment in your own school system (or in another that you would prefer to use), establish a desirable operational level, and proceed to state your conclusions based on tabulated data.

3. How does long-term planning, as based upon accurate data pertaining to specific needs, affect budgeting procedures? Do you believe that "padding" the budget is a desirable tactic to gain your ends? What better basis can you suggest for requesting funds?

* 4. Make an extensive list of audio-visual service items for which money would likely have to be spent during a fiscal or school year, classifying them under the following "fund" headings: (a) Salaries and Wages, (b) Operating Expenses, and (c) Capital Outlay. Select items in terms of personnel, supplies, equipment, and services that you believe are desirable for a specific community with which you are familiar.

* 5. Study budget categories as used in your local school system and code the items of your expenditure list (from Prob. 4) to conform with this new classification.

6. In the over-all school budget, as presented to local finance committees, should the audio-visual services budget be "hidden" or set forth openly as a separate budget? How do local conditions affect your recommendation on a decision in this matter?

7. How may limited funds be fairly allotted among several school units for vital services? How can you employ the "democracy" principle here?

8. According to your own budget system, state how you can make provisions for contingencies. How would dependence upon special sources of income affect your long-term planning?

9. How would you maintain control of expenditures in your own actual or hypothetical situation? If other local accounting agencies maintain a check-up on budget standing, what additional check-ups would you carry out on your own?

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CHAPTER EIGHT

EXPANDING AUDIO-VISUAL CENTER SERVICES

WHEN directors of audio-visual services are sufficiently interested and competent in dealing with curriculum problems, it is likely that expansion of their services will be welcomed, not feared. No one pattern for expansion can be described, but there are three main pathways that lead to the goal of providing increasingly comprehensive and rich services for teachers. These are: (1) the single-source pathway of the unified instructional materials center where basic book and audio-visual services may be expanded into an even more comprehensive program, (2) the audio-visual service route where the expansion into a more comprehensive program will include along the way all the services, except books, that teachers need, and (3) the pathway of expanding book and school supplies functions alone as a separate division. Of course pathways (2) and (3) may be deliberately kept separate, or they may be merged according to local decisions.

The best summary statement is that the director ought to be sensitive to instructional needs that demand new or modified services leading toward greater comprehensiveness and efficiency. As needed, then, the audio-visual director may well lead the way at an optimum pace through his recommendations for taking action, or he may be called upon by school-system administrators to:

1. Centralize, organize, and supervise the selection and distribution of textbooks and other reference materials.
2. Coordinate the ordering, storage, and distribution of school supplies.
3. Centralize and distribute maps and globes.
4. Coordinate the use of community resources, including reciprocal activities and field-trip programs.
5. Centralize and distribute museum materials.
6. Provide a centralized service for the production of still and motion pictures, charts, and other graphic materials.
7. Organize and coordinate a school-owned educational radio station.
8. Coordinate the use and production of television programs for instructional purposes.

All this appears to be a formidable undertaking, but it need not be when staff and financial support are adequate, and if this is not the case, the director must use his own good judgment by saying, "No," until conditions for success are more to his liking.

A closer look at the possibilities for expansion of audio-visual services needs to be taken, but first some attention will be given to the unique aspects of the unified instructional materials center.

Expanding into Books and Supplies. Expansion of audio-visual services into the field of strictly printed materials, as has been said before, converts the audio-visual center into a unified instructional materials center. Such a center in Portland, Oregon, was early recognized as one of the most comprehensive of its kind anywhere. "The main idea back of this unification," said the center's director, Amo DeBernardis,[1] in 1949, "is to provide for the Portland teachers one resource center from which they can obtain any and all teaching aids that fit their instructional needs, and also receive professional help in their use." In Portland, book services[2] not only include a centralized organization for the ordering, distribution, and repair of textbooks and supplementary books, but they also include a professional library of books, periodicals, resource units, and other curriculum publications. Insofar as school supplies are concerned, all school supplies from construction paper to science, music, art, industrial arts, and gym equipment are centralized under instructional materials center management. The points that DeBernardis[3] makes regarding the advantages of a unified center are worth noting. They are as follows:

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[1] Amo DeBernardis, "Portland's Instructional Materials Center," *Educational Screen*, Vol. 28, No. 1, January, 1949, pp. 13–15.

[2] *Ibid.*, p. 15.

1. It minimizes the tendency to look upon certain instructional aids as entirely unique and therefore unrelated to the general process of education.
2. It provides better coordination of service functions of purchase, distribution, and maintenance.
3. It has elicited more coordinated effort on the part of staff in the in-service growth of teachers.
4. It makes for greater economy, both in use of materials and in effort by staff and the classroom teacher.
5. It has provided more effective coordination of aids within each school.
6. It has made possible a more efficient inventory.
7. It has made possible a better implementation of the curriculum.

In previous chapters a number of references were made to the services given by other instructional materials centers, such as Rochester, N.Y., and San Jose and San Diego, California, to repeat just a few. Although the instructional materials service centers visited by the author differed in the comprehensiveness of the services they rendered, all coordinated textbook and library book services. Even so, the organization and scope of such activity varied. In some cases textbooks and library reference books of all kinds were handled centrally for elementary schools only, since school libraries and librarians were not available there. At the secondary level, textbooks and other reference materials were sometimes decentralized at each secondary school library. At other instructional materials centers, both selection and supply of textbooks were coordinated on a system-wide basis. (See Fig. 8–1.) In larger instructional materials centers a supervisor or assistant director in charge of book services was employed. An interesting variation of textbook services is to be found at Fresno, California, where the director of audio-visual services is also the textbook con-

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[3] *Ibid.*

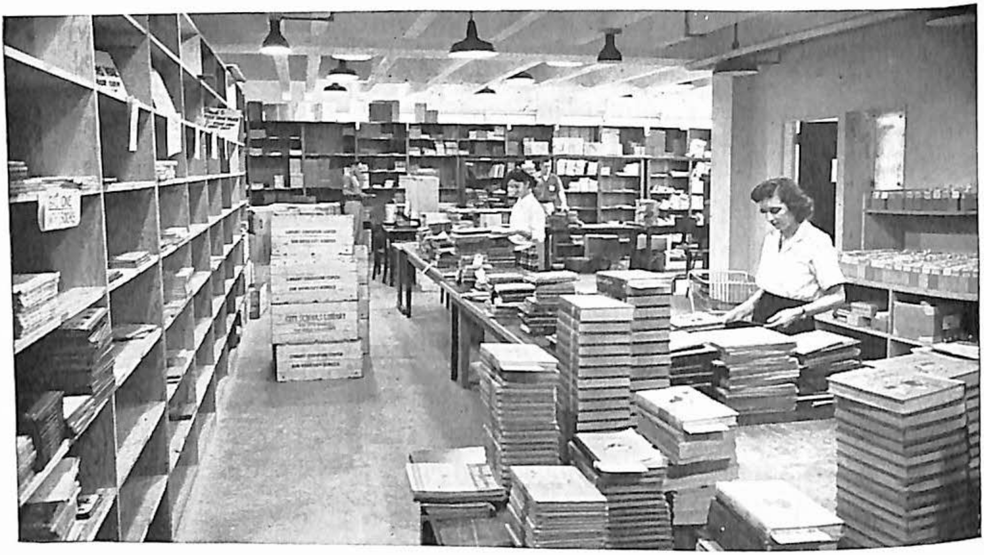


Fig. 8–1. **Shown here is a part of the book division of a comprehensive instructional materials center.** ***(Courtesy San Diego City Schools.)***

sultant who coordinates the work of textbook selection, but who does not have to provide for storage and distribution. The director of audio-visual services should realize that he could easily become, more than anything else, a manager of a warehouse. This will be inescapable if he permits himself to be saddled with extensive book and school-supplies services without necessary increases in staff and budget. Each situation will demand a careful analysis and a wise policy decision.

Whether or not the audio-visual center becomes an instructional materials center, there are other important possibilities for expansion that need to be explored. Some of these, such as photographic and graphic production, radio, and television services, need extensive treatment. However, others of smaller scope (though nevertheless important) may be suggested and discussed quickly because they have been already dealt with partially in earlier chapters. Such possibilities for expanded services are discussed under the subsequent topical headings.

Maps and Globes. There are several ways to solve the map and globe supply problem, and the one chosen will depend on a number of factors, including mainly the various courses of study, teaching units and the nature of activities, the present map inventory, available storage space, available delivery facilities, and the degree of audio-visual service development. Suggested possibilities for developing this aspect of audio-visual services would be to:

1. Stock globes and their appropriate floor and table stands only. Deliver and pick them up according to an established loan period.
2. Stock both globes and maps as needed by teachers. Fill orders for them, and handle delivery and pickup by regular procedures.
3. Stock roll-type maps only. Supply globes for permanent use in classrooms.
4. Stock globes and maps for elementary schools only. Supply maps and globes to secondary schools on a permanent assignment basis.
5. Set up a stock of maps and globes in each school A-V service center.
6. Coordinate the selection and purchase of maps and globes for permanent assignment on an established budget basis to elementary and secondary schools, as needed.

Storage facilities for maps and globes have already been suggested in Chapter Six, and the selection of maps and globes ought to be carried out according to the principles and procedures set forth in Chapter Four. As a rule, expenditures for maps and globes have become almost as well established as expenditures for books, and to assume the task of centralizing map and globe distribution services, short of regularly allotted funds for this purpose and short of delivery service facilities, would be folly. With regard to delivery problems, a good way to start such services would be to study economies made possible by either of the preceding steps, step (5) or step (6), and then proceeding to other alternatives if warranted. Teachers who are affected by these decisions ought to have a voice in making the recommendations, and the director who tries to set up these decisions alone will surely make serious mistakes.

Clearing House for Use of Community Resources. Because the director of audio-visual services is usually quicker than most observers to note weaknesses in, and abuses by teachers of, the field-trip method, he ought to give early consideration to the organization of this method as well as the use of other important resources in the community. An example of field-trip organization has previously been given, namely, at San Jose, California, and of course there are other examples the country over. As the director tackles this problem, he should look ahead to an analysis of the difficulties to be encountered at the following levels of organization service and control:

1. The director may serve as a leader and teacher of teachers in promoting better use of the field-trip method, preparing or obtaining the preparation of bulletins on procedure, together with a community field-trip sourcebook. Such handbooks must present appropriate material on transportation problems; on how to make field trips worth while as a means of solving pupil problems; on legal responsibility and insurance coverage; and on procedures for making arrangements. As a vital part of this level of organization, the director should work with a group of principals and teachers in obtaining adoption by the Board of Education of a local school regulation giving authority to teachers to conduct field-trip activities off the regular school grounds as a regular part of the local educational program.

2. In addition to the first level, the director may seek to provide even more service by coordinating through the school-system audio-visual center the supply of fully insured school-bus transportation. He may also plan, by a system of advance-request forms, to take over the job of being the official liaison agent between the school and community agencies. Thus the director would be in a position of controlling the field-trip activity for the school system, using, of course, a cooperatively formulated and formally approved policy for guiding his decisions.

These two plans for service are vastly different. The first could be implemented without extra staff and budget, but this is not true for the second. School buses and full-time drivers cost money, and the job of organizing a ceaseless flow of students into and out of community agencies is an extremely critical business, demanding excellent coordination. In smaller communities at least a full-time secretary would be required, and in larger cities a professional assistant would be required as a minimum. This would be especially true if the use of such community resources as the following were to be organized and coordinated: resource persons for interview or classroom visitation; documentary reports, industrial and manufacturing materials, and work experiences; survey and observation experiences; and community service projects. It is obvious that coordination of school-community relationships is desirable, but how much of it should the director of audio-visual services do? Since he has a keen interest in the field-trip technique traditionally, perhaps this is as far as the audio-visual specialist should go. However, other curriculum specialists also have a vital interest in the use of community resources; citizenship, history, and government, for example, as a realm of interest for the social studies expert. And of course the director of guidance services may well need to coordinate all aspects of vocational resources in the community. The efforts of all of these individuals may well be pooled under the leadership of the audio-visual director, or if necessary, such individuals may have to find ways to work alone according to their own interests.

The same two levels of organization (namely, service and control) described for field-trips, obviously apply to the use of other community resources as well. That is, the bulletin-catalog of resources, coupled with efforts of community resources workshops and other groups to teach teachers how to use the resources in effective professional fashion, should be the minimum activity suggested, with complete coordination and effective control of such activity on a system-wide basis being the maximum amount of expansion in this direction possible. A big job remains to be done, and until staff and budget are provided and adequate policies are formulated, a number of individuals will apparently have to share the work of organizing and conducting the best possible reciprocal relationships between the community and its schools. The director of audio-visual services is almost inescapably one of these individuals.

Centralization of Museum Materials. Some school systems are fortunate in having auxiliary school service centers specializing in museum exhibits for schools. The Jamaica Plain Children's Museum of Boston, the Children's Museum of Hartford, and Washington State Museum of Seattle are a few examples of many museums and historical societies around the country that have prepared loan exhibits for school use. In Seattle the school delivery trucks pick up and return a wide variety of loan exhibits as scheduled for the schools. The Children's Museum of Hartford, in addition to small loan exhibits, provides large, corridor display-case exhibits available on a one-month loan basis. The Jamaica Plain Children's Museum of Boston supplies excellent mounted picture sets to illustrate uses of the materials in the loan exhibits prepared and shipped upon order to the schools. Realia constitute one of the important basic categories of audio-visual materials, and the use of such primary visual sources must not be by-passed by teachers in their zeal for graphic representations. Instructional needs, the nature of problem-solving activities, and the need for first-hand experience for precise understanding will have to determine the urgency for such materials. The director has a responsibility to discover such needs and to take appropriate action. A few possibilities for providing realia, specimens, models, and dioramas are:

1. Encouraging existing community, regional, and state agencies to undertake new programs or to expand their present school services, and then publicizing such materials and coordinating their procurement on a loan basis.

2. Selecting and purchasing, after careful evaluation, such models, mounted specimens, dioramas, and realia as are available through regular merchandising agencies.

3. Employing museum specialists, naturalists, and artists to prepare the needed exhibits and displays for distribution to schools. The local fabrication of specially fitted transit boxes to provide maximum protection for valuable materials is a necessary adjunct of such on-the-spot production. Actually, the local production together with selection and purchase of commercially prepared materials is the same as organizing a school museum within an audio-visual or instructional materials center.

4. Organizing workshops for teachers, using museum specialists and other needed demonstrators to teach teachers skills in displaying and using materials that can be made in class by pupils or brought in from home and other environments.

It can be seen that some of these possibilities for action involve extra staff, budget, and storage facilities of a permanent nature, while others need only the director's time and energy. Once again in this connection, the director is referred to Chapter Four for the factors that must be taken into consideration when deciding what new materials ought to be added to the audio-visual service program.

In seeking to meet system-wide instructional needs and in seeking to provide a range of significant learning experiences, the director should, as soon as feasible, turn his attention to the development of other major service functions. The first of these to be discussed is the centralized production of photographic and graphic materials.

PHOTOGRAPHIC AND GRAPHIC PRODUCTION CENTER

In Chapter Three it was suggested that teachers be taught photographic and graphic production skills not only for improving their communication skills but also as a means of stimulating them to increase the range of significant, challenging learning activities for pupils through the joint efforts of pupils and teacher in classroom production activities. In Chapter Four it was suggested that stocks of expendable, still-and-motion-picture production supplies be maintained for issue to teachers as an important part of the service program. In Chapter Five it was recommended that each school-building A-V service center incorporate a small photographic darkroom in connection with its work space for use by students and teachers. In Chapter Six a photographic and graphic production center was listed as one of the basic elements for which space ought to be allotted in planning the audio-visual center layout, and in Chapter Seven, in dealing with financial support, an example of cost determination included outlay for photographic supplies for use by teachers and pupils.

Actually, these previous references constitute an indication of the importance that is attached to photographic and graphic activity on a centralized as well as on a decentralized basis. In truth, however, centralized photographic and graphic production centers in school districts are not prospering very well. Some of the city audio-visual centers visited by the author showed photographic laboratory facilities that were unused; others for example, Los Angeles city schools were being pushed to capacity; and still others, while properly staffed, were not devoting more than 10 to 15 per cent of operating time to pictorial production for the classroom. Work loads, on the other hand, ran heavy with publication schedules on a system-wide basis. Graphic production centers, either a part of or separate from photographic work facilities, also were observed to be busy with school-system publications as well as with classroom exhibits and charts. To help the prospective director explore the needs for a photographic and graphic production center, some of the usual services are listed in the following paragraph.

Services of a Photographic and Graphic Center. The list of major services in a photographic and graphic center includes:

1. Produce study print pictures in sets for classroom distribution, such as local pictures of historic sites and manufacturing processes.

2. Produce filmstrips and slides on topics needed for school use but unavailable for purchase, such as materials for business skills with local adaptations and materials for science laboratory skills.

3. Make motion pictures of special processes for classroom teaching purposes such as are needed for musical processes and techniques, and athletic skill development.

4. Produce pictorial materials for student diagnosis and remedial work, such as materials needed for improving reading and speech skills.

5. Produce pictorial and graphic material for public relations meetings, for more effective communication.

6. Handle picture-mounting processes for all pictorial materials acquired for distribution.

7. Produce study displays, and exhibit material such as dioramas.

8. Make up illustrations for school publications, including improvement in design of mimeo bulletins as well as of formal printed publications for wider circulation.

9. Offer advisory and consultative services to school audio-visual coordinators, to school-club groups, and to teachers for their own photographic and graphic projects.

10. Microfilm important records.

11. Provide photostatting service as needed for the school system.

12. Prepare diazo-ammonia overlay transparencies.

13. Make photographic plates for photo-offset printing processes.

These important services are vital to the director of audio-visual services, and he needs to consider what some of the possible plans and operational levels are for doing this work.

Possibilities for Getting Photographic and Graphic Work Done. The plans given here start with those most desirable operationally from the director's standpoint and end with those that provide a minimum of continuous, high-caliber service, and hence are least desirable.

Plan 1: Provide a photographic laboratory suite consisting of workroom for dryers, mounting presses, etc., and at least two small darkrooms to facilitate simultaneous developing and printing work by more than one person at a time. Employ a full-time photographer and a full-time clerk-technician. Also provide a graphic production suite, including a main workroom in the neighborhood of 30-feet by 15-feet with a small shop facility adjoining it, approximately 12-feet by 12-feet minimum but much larger if, for example, this shop is needed to serve television set construction or construction of dramatic flats, etc. For this graphics and art aspect of the work, employ a full-time artist and at least one part-time assistant. If possible, include in the special layout a room usable as a photographic studio.

Plan 2: Provide a compact suite of workrooms consisting of a central workroom 12-feet by 20-feet (including two drawing-board tables, storage workbench, photo dryer, and workbench for picture trimming and mounting); one dark room, approximately 9-feet by 12-feet and a small adjoining room with exhaust fan for diazo-ammonia transparency developing and for auxiliary storage. Staff should consist of one full-time combination artist-photographer.

Plan 3: Provide a small darkroom, 9-feet by 9-feet, with an adjoining workroom of about the same size for transparency production and one drawing table and a graphic supplies bench. This production suite is to be used by the director himself or by a full-time or part-time assistant in photography and art-work. Under minimum-sized facilities, it may be necessary to have special photographic enlargements for exhibit and display purposes contracted for elsewhere.

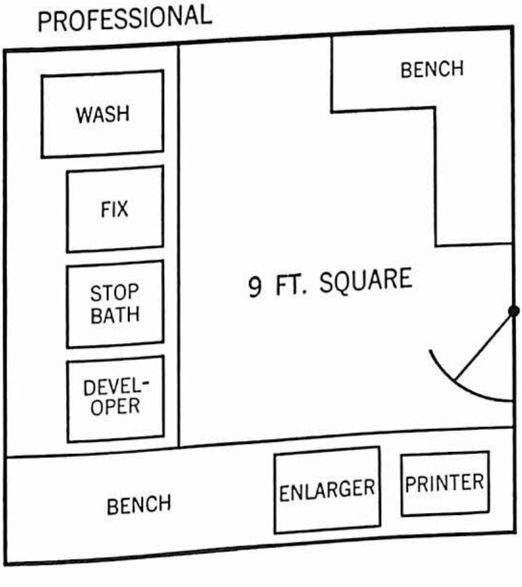
Plan 4: Provide no central facilities whatever, but utilize on an arranged schedule the darkroom in a new school building as close to the central headquarters as possible. Staff would include a part-time assistant or the director only. Three other arrangements for staff are possible: (a) coordinate a minimum number of urgent requests for service regarding lettering, posters, charts, etc., by asking art department supervisors, and mechanical drawing teachers to do lettering jobs for layout purposes as a donation of effort and talent for the good of the school system, (b) employ an assistant art supervisor to spend half-time doing graphic production assignments, working at the audio-visual center, and (c) pay for services of regular teachers possessing the abilities on an after-school, overtime basis for production projects.

Plan 5: Without using darkroom facilities of any kind, employ a combination photographer and artist, who will use an office drawing table and supplies bench for graphic work, and who will have photographic work done by local photo finishers. The alternative is for the director to develop his own photographic skills, using Polaroid Land camera processes for transparencies, and/or the Constat camera transparency process, for example, in combination with the diazo-ammonia techniques for whatever urgent projects need to be visualized.

It should be observed that the plans just described are for facilities at the school system A-V headquarters, and the implication is that instructional services will be provided for the various school buildings by the headquarters' staff. It needs to be emphasized, however, that, as a part of the service program, the director ought to provide the supplies required by teachers and pupils for the production of transparencies, handmade slides, black-and-white enlargements, motion pictures, and the common graphic materials in connection with significant learning and teaching processes. Thus it appears that photographic and graphic production services may have to be decentralized as well as centralized if all needed work is to be accomplished. Therefore the director ought to make arrangements, or seek to make them, whereby photographic darkrooms and other graphic-production working spaces now existing in school buildings could be utilized with the help of A-V service center technicians or photography club members. As has been stressed earlier, well-planned photo darkrooms and graphic-production work spaces ought to be recommended and incorporated in the plans when remodeling old or constructing new school plants.

Some Examples of Photographic and Graphic Facilities. Several methods for arranging facilities were implicit in the possible plans for action in the preceding section. Basically it is the teacher who ought to have a high priority for photographic and graphic services, and actually the service system in each school building ought to include facilities not only for doing the work for the teacher but also for the teacher to plan and prepare materials for himself. Hence, A-V service centers in both elementary and secondary school buildings ought to include at least one small photography darkroom together with working areas having such equipment as tilt-top drawing tables and drawing instruments, both mimeo- and spirit types of duplicating equipment units, workbenches with ample storage space for assorted stocks of paper, a paper cutter, a picture-mounting press, copy cameras and suitable stands, and diazo-type transparency-producing equipment, to mention a few of the basic items. Teachers should also be able to borrow cameras, film, special paper for lettering, charts and background purposes, clear and etched plastic sheets, etched glass slides, crayons, inks, grease pencils, etc., for use in the classroom as needed. At the school-system A-V center more extensive facilities are needed to handle the production of teaching materials of a system-wide nature, as for instance, a series of slides or filmstrips for a program of in-service education meetings in connection with language arts. Although only briefly dealt with, descriptions of plans 1 through 5 indicate in general the nature of the facilities required for those levels of operation. (See Figs. 6–3, 8–2, and 8–3.)

Fig. 8–2. **This small professional darkroom is characterized by considerable bench space.** ***(Courtesy Eastman Kodak Co., Rochester.)***



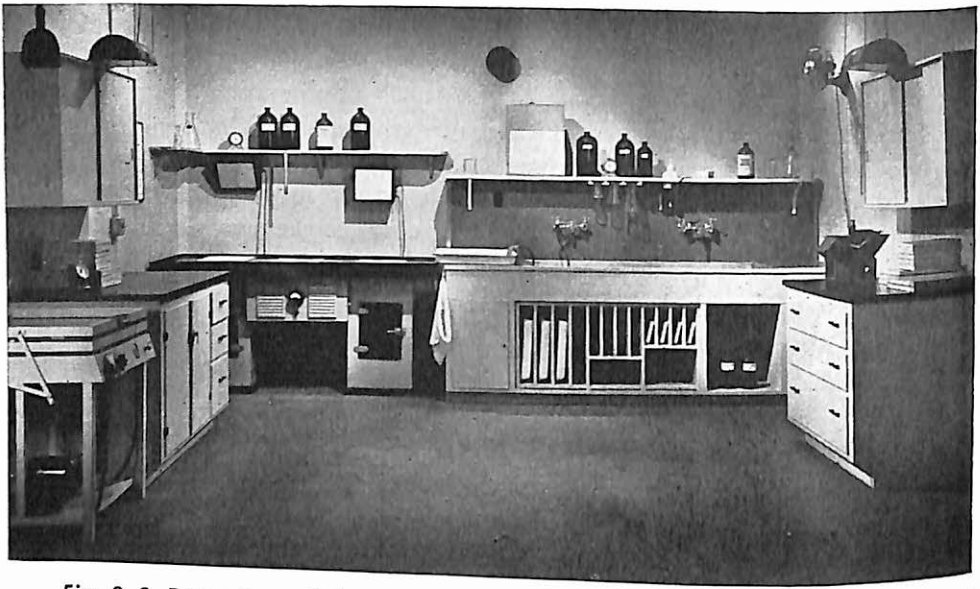


Fig. 8–3.* Regardless of size, arrangement of darkroom equipment needs to be planned carefully for the kinds of production work envisioned. When should several small darkrooms be provided instead of one of large size? *(Courtesy Eastman Kodak Co., Rochester.)

In planning photographic laboratory spaces, the following items are critical and need careful description:

1. Light-tight characteristics of the room, including proper light locks.
2. Electrical outlets near workbenches and near sinks.
3. Exhaust fans with proper light traps.
4. Regular lights and "safe" lighting.
5. Running hot and cold water, and sometimes sinks ought to have double-mixing valves and double drains.
6. Equipment such as trays, tanks, thermometers, timer clocks, enlargers, printers, light table, dryer, mounting press, sinks, and storage cabinets need to be selected and specified by make and size.

While the planner of the photographic suite may have the good advice of an architect, he should be forewarned that:

1. Two small darkrooms rather than one large one are needed if developing and printing processes need to be carried on by more than one person simultaneously.

2. Large prints demand more handling and sink space.

3. Ventilation is a necessary feature.

4. Stainless-steel sinks Type 316 or Type 317, American Iron and Steel Institute, of 18–8 stainless steel are recommended, although other sinks of lead and stone are often satisfactory.

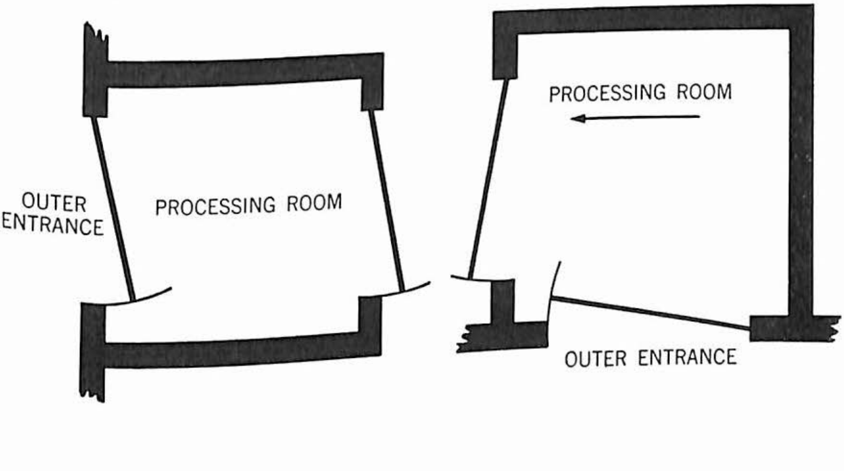
5. Linoleum covering for dry benches needs to have a coating of wax, as does hard maple.

6. Floor coverings of tile with surfaces that are impervious to moisture are desirable.

7. A space-saving type of light lock ought to be designed, where space is at a premium. (See Fig. 8–4.)

Photographic and graphic production services will probably be patterned after plans 1 and 2 in metropolitan areas, and in smaller school districts, services will most likely be similar to plans 3, 4, and 5. It should not be overlooked that production activity for instructional purposes may be organized by supplying personnel with required cameras, film, and supplies, and then contracting for needed laboratory processing and art work with outside-the-school agencies. Photographic and graphic services take on a new aura, however, when school systems contemplate television programming, because then,

Fig. 8–4. **An appropriate light lock is a vital part of every photographic darkroom plan. In addition to those shown, planners should consider revolving-door and labyrinth-type entrances.** ***(Courtesy Eastman Kodak Co., Rochester.)***



even if not before, visuals from a chart to a film clip and from a projected lantern-slide background to a model become indispensable to the teacher. More will be said about this in a later section.

Another area for audio-visual expansion that persists in getting interest and attention, even after the advent of television, is radio broadcasting for school instructional purposes. This expansion area is explored next.

RADIO BROADCASTING FOR SCHOOLS

According to the NEA survey[4] of audio-visual education in city school districts of the United States, 26 of 1,301 school districts responding to the question reported the operation of school radio stations, but this, of course, doesn't tell the whole story. Other radio broadcasting activities, using commercial radio stations on a cooperative basis, are making impressive educational contributions; for example, the FM School of the Air as organized in the State of New York, growing out of the previous successes of the Rochester School of the Air. In this instance 22 FM stations (all commercial except one) now broadcast the programs produced by schools, libraries, universities and colleges, governmental agencies, and individuals. The school radio development in Wisconsin, Iowa, Michigan, Ohio, Minnesota, Indiana, Illinois, and several others reflects the influence of strong university and/or state departments of education support. However, despite several notable examples around the country, and despite the introduction of low-cost, low-power FM equipment, accompanied by the nontechnical school-operating licensing arrangements promulgated by the Federal Communications Commission, the growth of school-owned broadcasting facilities has not prospered. Radio offers rich opportunities, however, as an expansion area for the audio-visual services program. Eclipsed as it seems to be by the bright hopes expressed for educational uses of television, the prospective director needs, nevertheless, to bear in mind the ways that radio broadcasting and related activities may be put to work in the schools.

Putting Radio to Work Educationally. There are several well-defined patterns for organizing for the use of radio. These are as follows:

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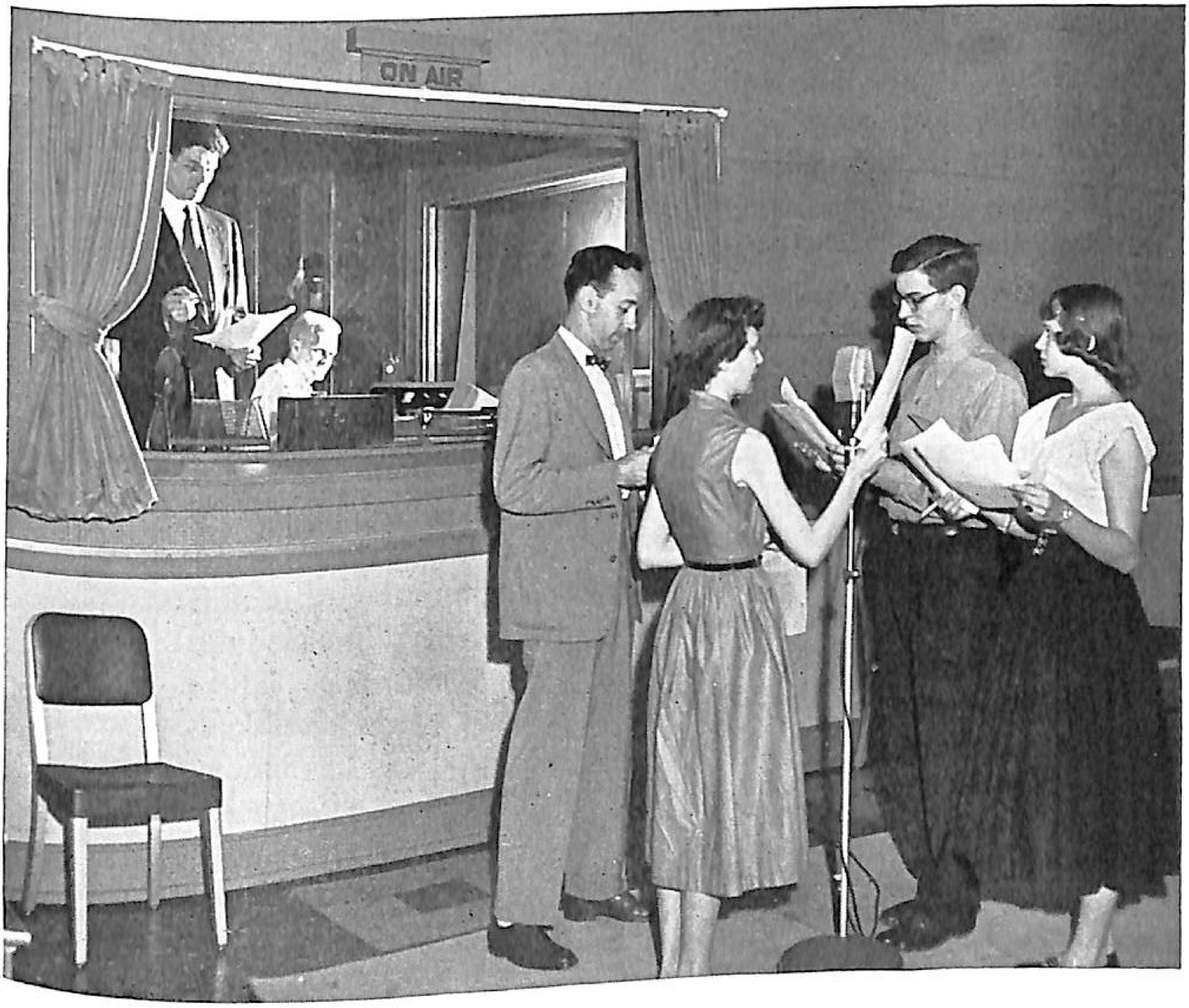
[4] "Audio-Visual Education in Urban School Districts, 1953–54," *NEA Research Bulletin*, Vol. 33, No. 3, October, 1955, p. 100.

1. Select appropriate FM radio broadcasting-equipment components and organize a local school-operated radio station for operation during school hours for strictly instructional purposes. A broadcast channel allocation will have to be obtained from the Federal Communications Commission, and of course, classrooms must also be equipped with radio receivers. Operating an extensive program will demand a full-time program-director-producer and a radio engineer as a minimum. Extensive programming operations may well require a staff of twenty or more individuals. (See Fig. 8–5.)

Fig. 8–5. This is the main broadcast studio and control room for the St. Louis Schools. ***(Courtesy Division of Audio-Visual Education, St. Louis Public Schools.)***



2. Select, especially in the case of small school districts, low-power, low-cost ($3,000 to $5,000) radio broadcasting equipment to operate on a limited program basis, using part-time teaching personnel as program directors and students as technicians, all operating under special FCC nontechnical licenses and a broadcast channel allocation.

3. Utilize and pay for, when necessary and available, the broadcast facilities of a local radio station for broadcasting instructional programs for classroom use as well as for public relations programs as needed. The regular teaching staff can be utilized, working under a part-time program director. Community resource people should be called upon heavily, as should curriculum specialists.

4. Make use of school-building central sound system for broadcasting school-produced programs. Tape-recorded programs can be used and then sent to other school buildings for repeated use.

5. Plan to provide no broadcast facilities whatever, but encourage full use of radio writing and program production as classroom-learning activities. Production of programs should be related directly to teaching units and should be the result of joint pupil-teacher efforts. Programs can be recorded on tape and used by other teachers, if programs are useful, on loan through regular audio-visual service facilities. For example, high school students could produce valuable programs for safety, citizenship, local history, music, science, and others growing out of significant classroom activities.

6. Equip the schools with radio antennae and radio receivers for appropriate classroom use of available radio programs, that is, if significant material is being broadcast regularly by educational agencies in the region.

Two other aspects of school radio broadcasting should be explored. These are the nature of radio-programming possibilities, and school-operated radio station facilities. These are discussed next.

Some Sample Programming of School Stations. The director ought to consider what other school radio stations have done, or are doing, in programming for instructional purposes when looking ahead to his own local plans for radio broadcasting services. A good example to start with is the relatively new St. Louis Board of Education FM radio station inaugurated in 1950 under the Division of Audio-Visual Education. An examination of some of the program bulletins and announcements during the period 1957–58 reveals program material for elementary, junior high, and senior high, as well as for college-adult levels. The St. Louis Station KSLH is, of course, a member of the National Association of Educational Broadcasters and thus has access to excellent transcribed broadcasts originating elsewhere. Examples of specific program areas for elementary grades include simple foreign language instruction in French and Spanish, safety and health, books and literary treasures, arithmetic, music, science, and social studies. Typical of junior high school level programs are such specific programs as *Rules and Tools of Geometry*, *Know Yourself* (emotional reactions), *Forward St. Louis*, and the *Missouri Constitution*. Typical of senior high school level programs are the following: *Put it in Writing*, *Iliad and Odyssey*, *Think it Through*, *Your Occupation and You*, and *Songs of France*, to mention just a few. Many of the programs in series (for example, *World Tour*) have well-worked out class preparation materials in mimeographed booklet form. Stations like Cleveland's WBOE and New York's WNYE, Chicago's WBEZ, Detroit's WDTR, Atlanta's WABE, Portland's KBPS, and others have long been providing rich instructional material. A few of the program titles appearing in a 1957 Chicago Radio Program Bulletin are as follows: *Approach to Poetry*, *Living in America*, *Careers in Retailing*, *Explorers of the Wild*, *Family Life Forum*, *Russia Today*, *Voice of Asia*, etc. Recording the best radio program productions on tape permits the building up of an extensive library of audio materials for use in classrooms over and over again as teachers have need of them.

School Radio Station Facilities. Space needed for school radio production and broadcast activities must be determined, of course, by the nature of present and future program schedules. Broadcasting on whatever scale, large or small, demands the following spaces:

1. One main studio and control room
2. One auxiliary studio and control room as a minimum
3. Main transmitter equipment room (may be located near or remote)
4. Administrative suite and production offices for staff and director.
5. Combination workroom and rehearsal room
6. Exterior space nearby, or on roof, for FM tower and antenna

As a general rule a main studio for school purposes needs to be

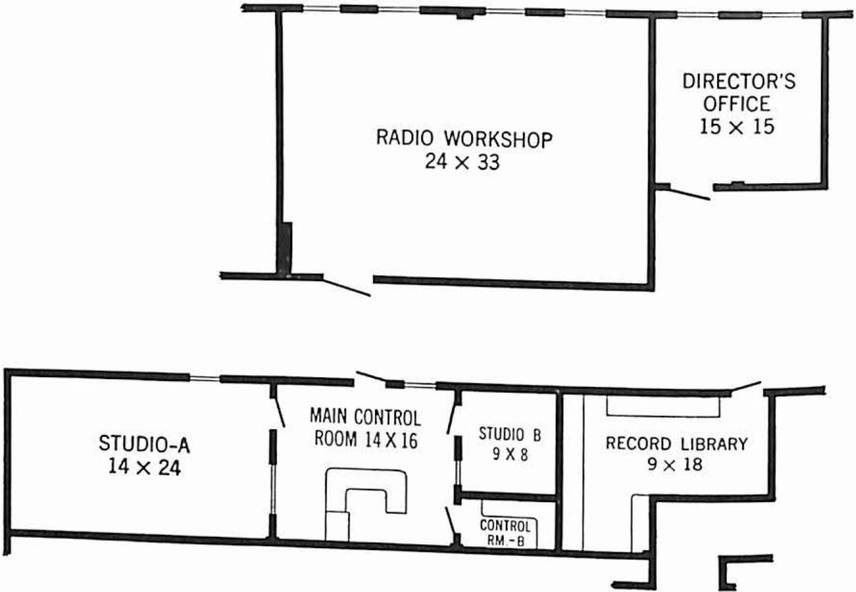


Fig. 8–6. This floor-plan shows that Huntington High School has a well-developed, city-wide radio broadcasting station. WVSH-FM ,10 watts, is a member of the National Association of Educational Broadcasters; it broadcasts about sixty programs weekly. ***(Courtesy Huntington, Indiana Schools.)***

at least 500 square feet in area, and the control room for it ought to be in the neighborhood of 100 square feet minimum. (See Fig. 8–6.)

The instructional needs for school-operated radio stations will have to be correctly analyzed, and wisest possible decisions must be made concerning recommendations as to the most feasible method for meeting them. Costs for staff and equipment may be deemed too great, or it may be wise to delay action until the role that television will play in education can be predicted with somewhat greater certainty. Perhaps these two vital, though costly, expansion areas ought to be combined.

EXPANDING INTO TELEVISION

Television is the great new expansion area for audio-visual services. The director must not put off learning how to use it; must not put off getting ready to use it; must in fact plan years ahead, if necessary, in finding appropriate local means for putting it to work. By comparison with school-radio services, the cost of television will be great. But problems other than cost may also be formidable to meet and solve. The director of audio-visual services, above all, needs to study this new audio-visual teaching tool and lead his colleagues into clear thinking about its eventual contributions. This section will therefore point out some of the possible operational levels for using television for instructional purposes; some of the unique jobs that television can do for the teacher; some of the facilities that will be needed by schools to make use of television techniques; and finally a few basic suggestions to the director for his leadership in formulating local policies and decisions for action.

Some Operational Levels for Using Television. As the director undertakes his own preparation for incorporating television into the school's audio-visual services program, he needs to consider the various operational levels in terms of local conditions and opportunities. These levels, based upon a study of the literature, are described in steps from minimum to maximum TV utilization as presently conceived, with each subsequent level incorporating those preceding it.

Level 1: Using appropriate in-service education techniques, set up system-wide plans for using home viewing of selected TV programs as a part of regular teaching activities. (The assumption underlying this suggested operational level is that home receivers are located within the area covered by a commercial TV station.)

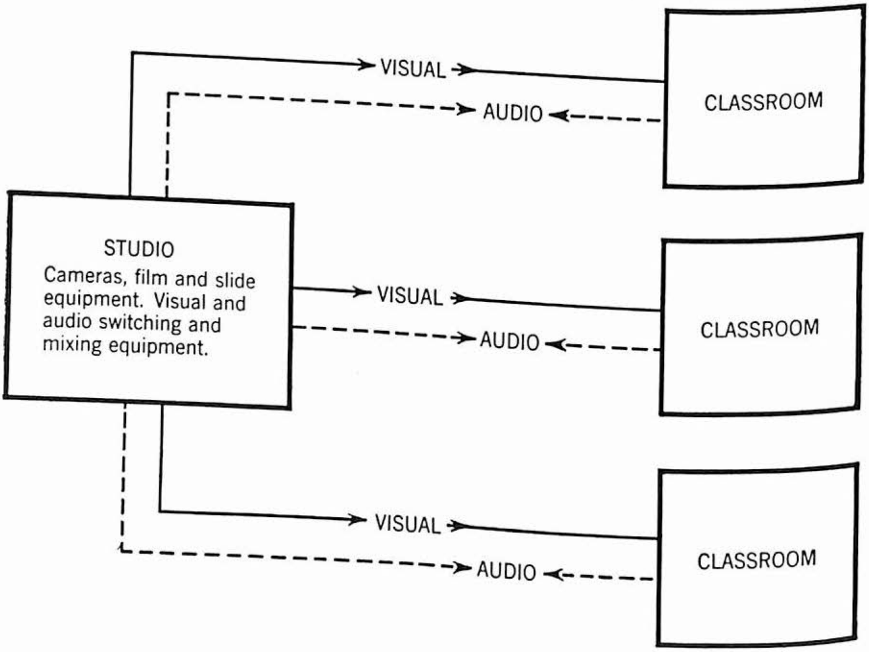
Level 2 (including Level 1): Provide necessary antennae installations and portable television receivers for each school building to make effective in-school use of educationally appropriate programs, including large-screen TV projection equipment. (The assumption is that both appropriate commercial and educational-television program material is being telecast regularly during school hours.)

Level 3 (including Levels 1 and 2): Provide an organization for the local production of television programs on film or for "live" telecasting over nearby commercial or educational channels.

Level 4 (including Levels 1 and 2): Provide closed-circuit, multi-Vidicon, fixed-focus, camera-viewing systems with instructor-controlled switching, together with multiple receivers for large classrooms, close-up viewing situations such as needed for laboratory preparation sessions, and demonstrations in the fields of science, shop, homemaking, music, and others.

Level 5 (including Levels 1, 2 and 3): Provide a central, closed-circuit TV system for the school district, with adequate distribution facilities for linking all schools by coaxial cable (or by low-power radiation) and with an additional system of originating classroom studios, making use of portable, Vidicon camera units that can operate independently or that can supply audio and video signals to the main studio for distribution. At this operating level, teachers will use scheduled TV programs in their own classrooms in addition to the other audio-visual materials used regularly. They will, according to plan, take their classes to large viewing rooms seating two to five

Fig. 8–7. One or more central closed-circuit TV program-production studios may be needed for each school system. ***(Courtesy Sarkes Tarzian, Inc., Bloomington, Ind.)***


VISUAL
AUDIO
CLASSROOM
STUDIO
Cameras, film and slide equipment. Visual and audio switching and mixing equipment.
VISUAL
AUDIO
CLASSROOM
VISUAL
AUDIO
CLASSROOM

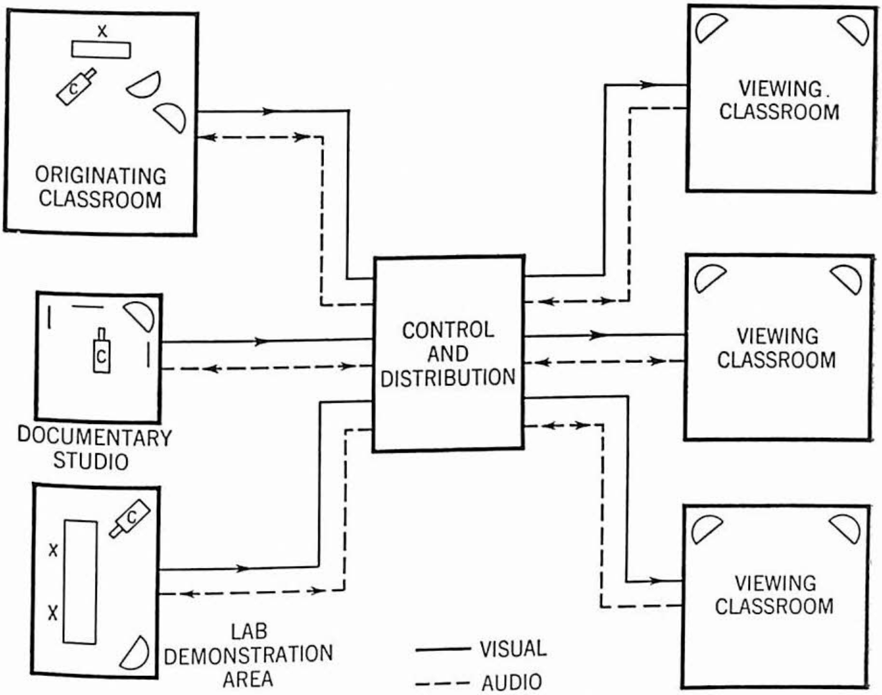


Fig. 8–8. This diagram shows how programs may be routed to specified classrooms in any one school building. What kinds of equipment, facilities, and staff would be needed to make effective use of instructional television as indicated in this diagram? ***(Courtesy Sarkes Tarzian, Inc., Bloomington, Ind.)***

hundred pupils; or they, themselves, may teach large TV-viewing groups with or without their own classes present in the originating classroom studios.

Several courses in the curriculum for both secondary and elementary schools may eventually be taught under such operational conditions to large groups by one teacher, while other teachers and assistants at the same educational level follow through subsequently in smaller discussion or laboratory sessions. In some special cases, courses may be offered only by the television teacher, and in these cases a staff of assistants will handle the work of analyzing, evaluating, and correcting exercises, reports, and examinations. (See Figs. 8–7 and 8–8.) The five levels may, of course, be recombined into other levels, depending upon local conditions and depending more particu-

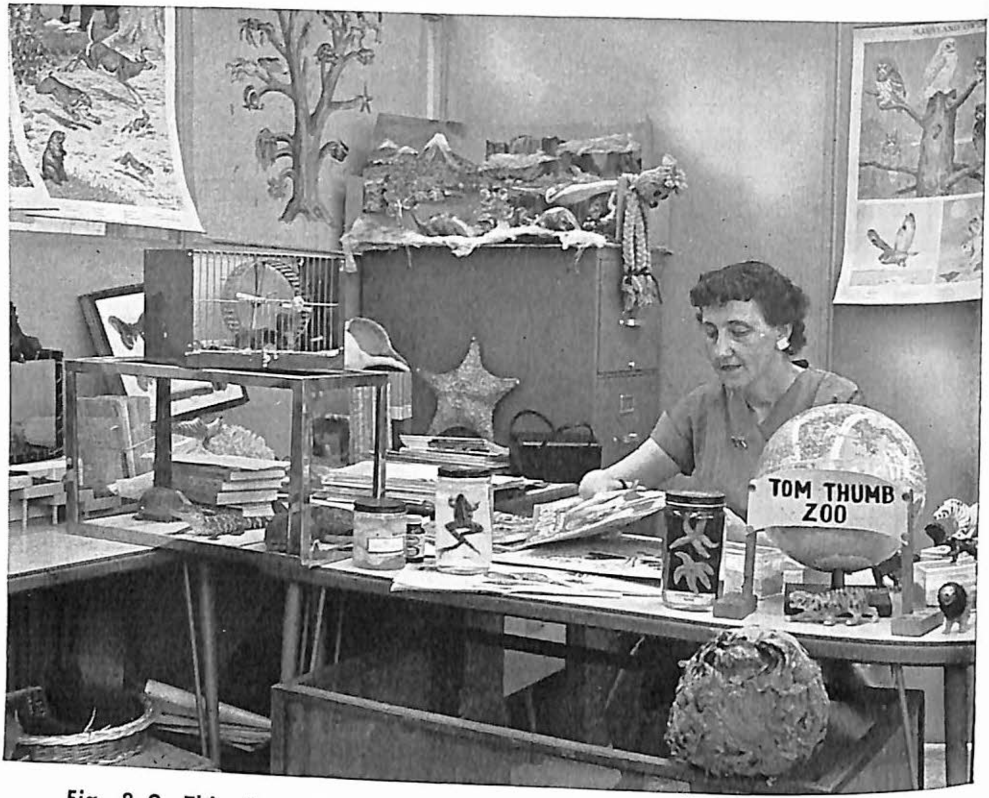


Fig. 8–9. This Hagerstown, Md., teacher is preparing to teach several classes via closed-circuit television. Will television switching devices help save time in presenting different kinds of materials? *(Courtesy Baltimore Sun. Photograph by A. Aubry Bodine.)*

larly upon the knowledge of how television techniques can serve the teacher.

Some Ways that Television Can Help in Teaching. In Chapter Two it was claimed that knowledge of the roles that audio-visual materials played in helping teachers was an essential that led to expert performance in their utilization. The reader should review those six roles in preparation for the present discussion because the question is being asked: Just how does television as one of the audio-visual tools contribute to the teaching process? Certainly the television camera linked to a transmission or distribution system has an immediacy factor that the film can hardly hope to match, but even so,

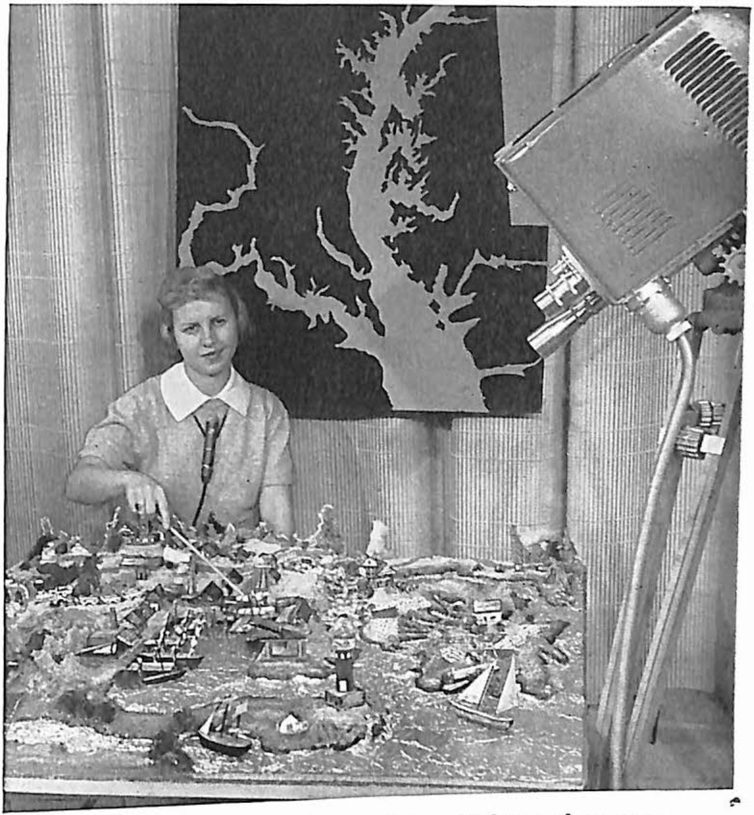


Fig. 8–10.* Are audio-visual materials widely used on commercial as well as instructional television? If you were an elementary school pupil, do you think you would like to watch this program? *(Courtesy* Baltimore Sun. *Photograph by A. Aubry Bodine.)

the same roles apply. What must be further noted is that television may have some unique contributions to make because it easily becomes a system for blending all the audio-visual materials with maximum efficiency within a single program if necessary. Some of the principal and unique contributions stated in the following list are admittedly speculative, but the director of audio-visual services needs to consider them, nevertheless, in his quest for sound decisions. In no sense, however, is it implied that the television camera, distribution amplifier, and production studio should be substituted for the school-

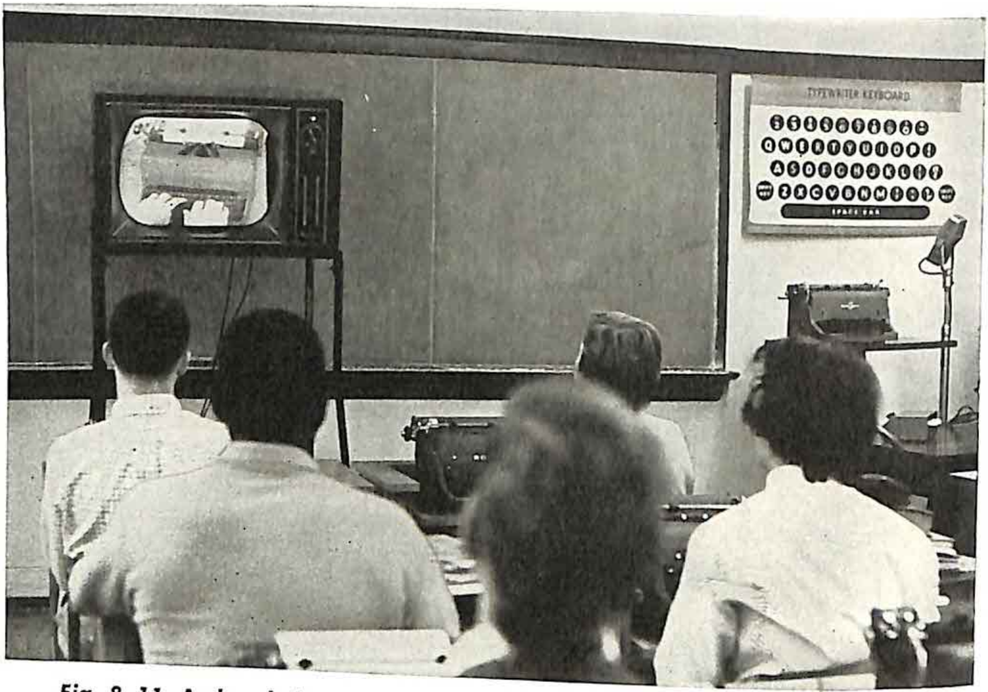


Fig. 8–11. A class being taught by television. (Courtesy Evanston Township High School, Evanston, Ill.)

building coordinator, the A-V service center, classroom projectors, mobile tables, student operators, or for the teacher. Bearing this in mind, some of the unique ways in which television may contribute to the teaching process are:

1. The television screen can bring to the viewer the most carefully timed, well-coordinated complex of visual and audio cues for learner reaction. That is, by virtue of the technical staff, electronic equipment, planning, and preparation, such components of communication as film clips, charts, models, personalities, and verbal symbols are blended and uniquely presented. Thus a smoothness of presentation is possible, even though the quality of the TV picture is not up to actual classroom projection standards, that in its most complex forms is hard to achieve in the regular classroom. (See Fig. 8–9.)

2. "Live" television screen presentations by individuals may, by desirable programming techniques, pull people together and hold them in large groups, or in widely separated classrooms, in a personal

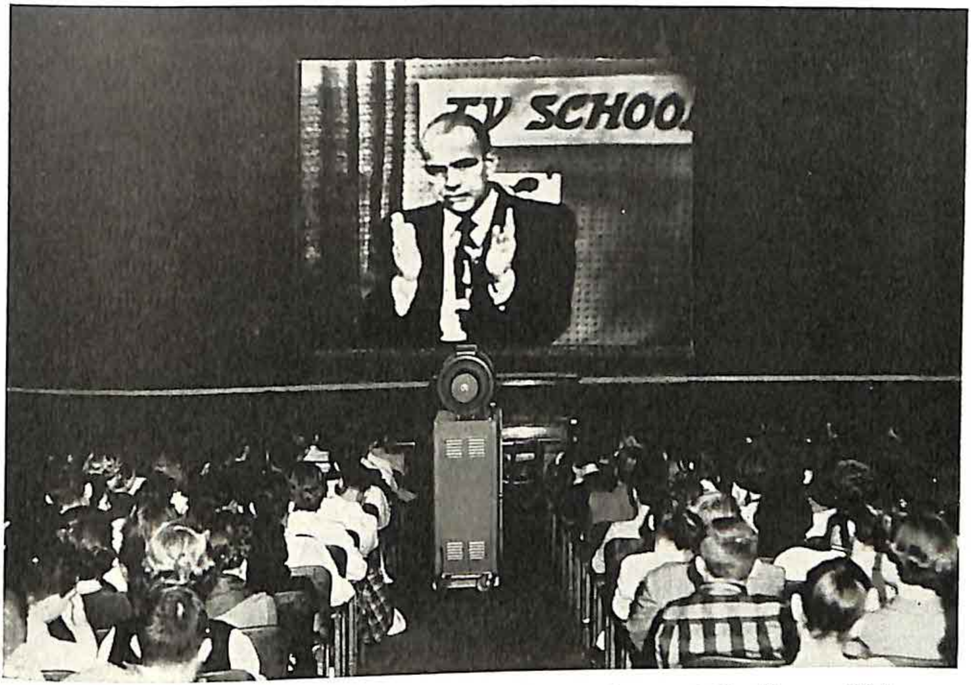


Fig. 8–12. Large-screen projection TV equipment in use at the Meyers High School, Wilkes-Barre, Pa. (Courtesy General Precision Laboratory, Inc., Pleasantville, N.Y.)

way that film prints and motion picture projectors cannot accomplish without having a teacher present. This means that large groups of pupils may, under ideal conditions, receive messages that present information and define issues, demonstrate, raise questions, state problems, stimulate interest, suggest activities, give detailed directions for action, and provide a standardized common experience. (See Figs. 8–10 and 8–11.)

3. Provided that they have the capability of working in front of a class, a microphone, and a battery of TV cameras, as well as in more traditional studio environments, a great personality and a truly superior teacher may be employed whose influence is spread out over large numbers of pupils in a personal way as a substitute for the usual control of other less intelligent, less creative, and less stimulating personnel. (See Fig. 8–12.)

4. The television screen, given proper support by staff, equip-

ment, and coverage, can provide an on-the-spot immediacy that the motion picture cannot equal except in the case of special theatrical equipment where TV screen-to-film-to-projection-screen is possible in a little over a minute of time.

As the prospective director of audio-visual service notes this analysis, he needs to remember that, unless the statements in Chapter Two are in error, the principles of teaching and learning apply as well to learning and teaching via television as to any other situation. He needs to re-examine those principles and needs to note particularly that learning is an intensely personal matter, and that the breadth and scope of modern educational objectives encompass the wisdom to act, to choose, to perform at specified levels of competence, to think, to create, to practice, and to believe, as well as to understand about a process. He needs thus to consider in the light of present audio-visual technology, and in the light of truth revealed through research, how far he and his colleagues should urge their fellow lay citizens to go toward automation and the centralized, push-button timing of lessons on TV screens. However, the technology of television for schools is advancing rapidly, and the educational components and facilities are at hand, even though the dollars to buy them are still behind tightly drawn purse strings. The director needs to become familiar with available TV equipment and necessary facilities in order to be able to advise those who need it, and in addition, he ought to organize situations in which best decisions for the use of television may be reached.

Some Facilities for Television. In a television-in-teaching experiment conducted at Los Angeles City College,[5] the instructor himself became the producer-director by switching from one camera to the other and by bringing in sound from the receiving classroom; all this by pushing four or five buttons. (See Fig. 8-13.) As the reader studies this discussion of needed facilities, he should be forewarned that costs vary greatly for different operational systems and that, short of detailed specifications for a specific local system, it would be hazardous to accept uncritically the general cost estimates or reports of costs elsewhere. A recent closed-circuit TV studio installation, which the author helped plan, called for an outlay of $80,000 ex-

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[5] "The Los Angeles Project," *Film World and AV World Magazine*, Vol. 14, No. 1, January, 1958, pp. 32–34.

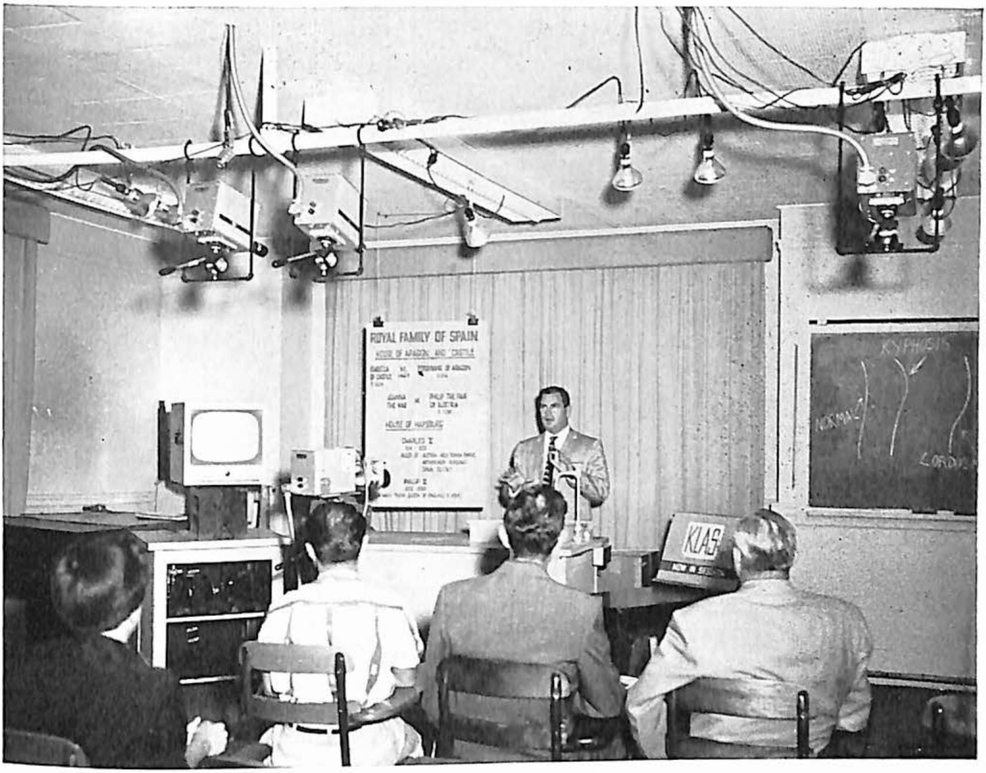

Fig. 8–13. This TV teacher-director-cameraman needs the help of a technician to control picture quality and to operate the remote-control zoom lens. *(Courtesy Los Angeles City College.)*

cluding the cost of preparatory remodeling of the assigned space, the cost of installing equipment and lighting, and the cost of external coaxial-cable linkage with classroom TV receivers. This figure could have been reduced by thousands of dollars had Vidicon cameras been specified instead of the Image-Orthicon type. It was planned, however, to add to the basic over-all arrangements later by using complete mobile and fixed Vidicon camera-and-control units costing $12,000 to $20,000 each; these, if necessary, can feed the main studio for redistribution or feed nearby viewing areas. The following listing of facilities for the use of television in teaching is classified according to two operational procedures:

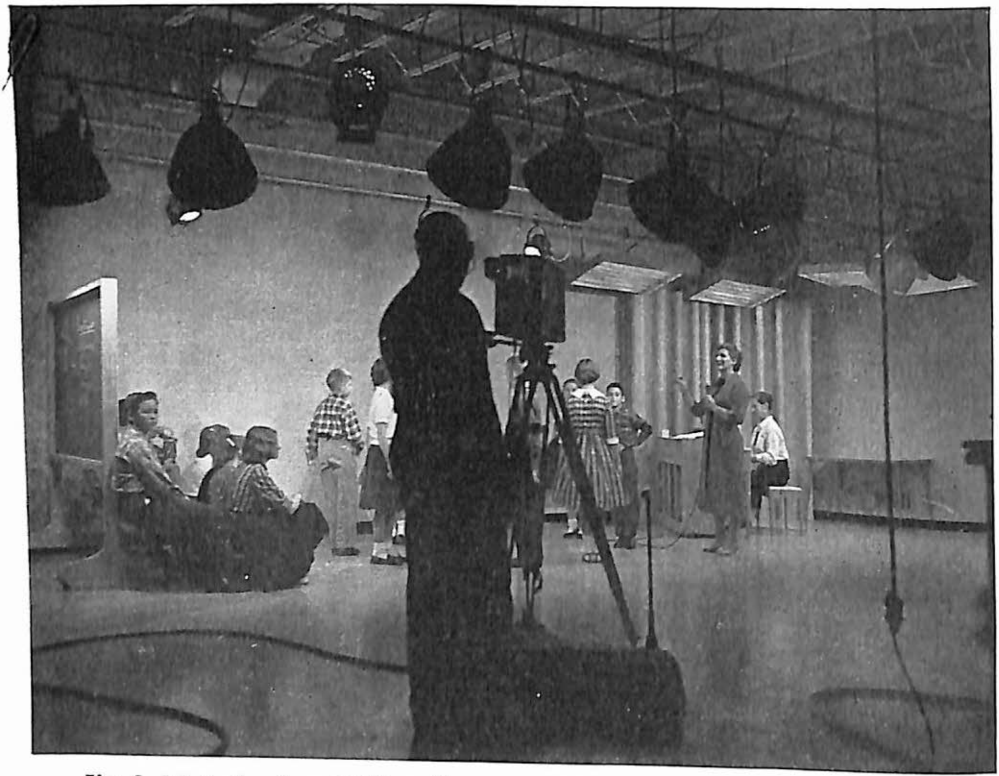

Fig. 8–14.* Action in a CCTV studio operated by the Hagerstown, Md., Public Schools. *(Courtesy* Baltimore Sun. *Photograph by A. Aubry Bodine.)

For Programs Originating Outside the Local School System

1. Provide regular all-channel-tuner receiving sets, preferably of mobile type unless every classroom is to be equipped. Sets should be able to receive closed-circuit signals in case of future expansion into this field of production.

2. Provide a master antenna system with conduits into each classroom, separate from or included with the school's central communication system.

3. Classroom light exclusion systems are not absolutely necessary, but light-dimming systems such as regular venetian blinds or other translucent shades are desirable for optimum viewing. The general light level for comfortable viewing is reported to be 12 foot-candles.

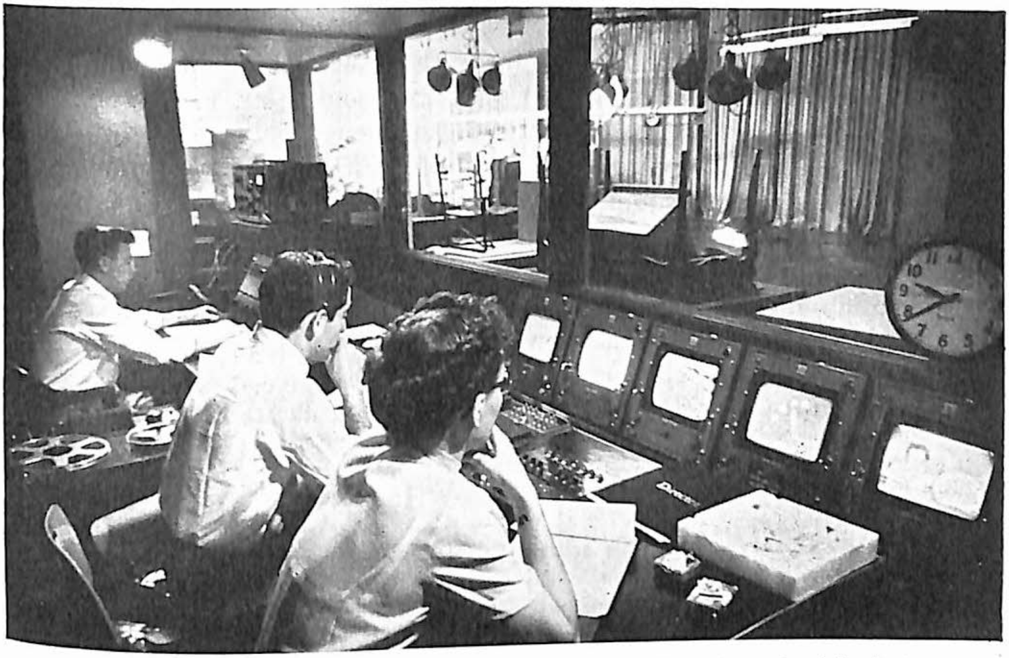

Fig. 8–15. Identify the visible equipment units, and explain the jobs being done by the individuals shown in this TV studio control room. *(Courtesy WQED, Pittsburgh.)*

4. A big-screen projection television receiver may be needed for large-group viewing in the schools.

5. Production of programs for telecasting by nearby commercial channels may be promoted by providing rehearsal room facilities such as auditorium stages, science classrooms, and all-purpose or music rooms as makeshift studios. Motion picture production equipment for filming such programs will be necessary, or all programs will have to be telecast "live" from the commercial station.

For Programs Originating in the School System

1. Probably the first facility needed will be a central television production studio and distribution center interconnecting schools by coaxial cable. (See Fig. 8–14.) In the Hagerstown, Maryland, television experimental set-up, 13 miles of connecting cables were reportedly used to link the participating schools together. Such a central production and distribution area ought to include (a) one

large and one or more smaller studios with connecting (though independent in operation as needed) control rooms (see Figs. 8–15, 8–16, and 8–17); (b) a property and flat-storage room and a construction shop of adequate size; (c) an observation area; (d) a shop and work space for equipment technicians and also for film-and-slide inspection workers; and (e) several administrative and service offices. The Department of Audio-Visual Instruction[6] recommends as a minimum space allotment for television production the following: "a studio at least 30′ x 40′ with a 15′ ceiling adjacent to a prop

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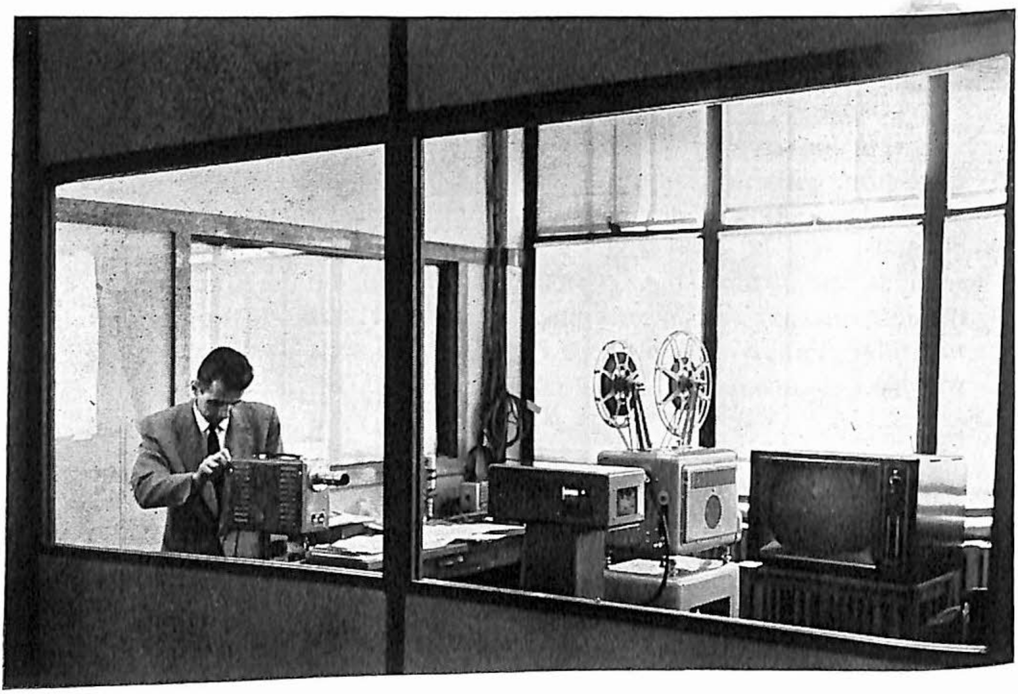
[6] *Planning Schools for Use of Audio-Visual Materials,* No. 3, AV *Instructional Materials Center,* DAVI of the NEA, 1201 Sixteenth St., N.W., Washington, D.C., 1954.

Fig. 8–16. Observe this high school CCTV film-room; then compare and contrast it with Fig. 8–17. How many complete multiplexer-camera systems would be required if four films were to be shown simultaneously, being routed to different viewing rooms? *(Courtesy Evanston Township High School, Evanston, Ill.)*



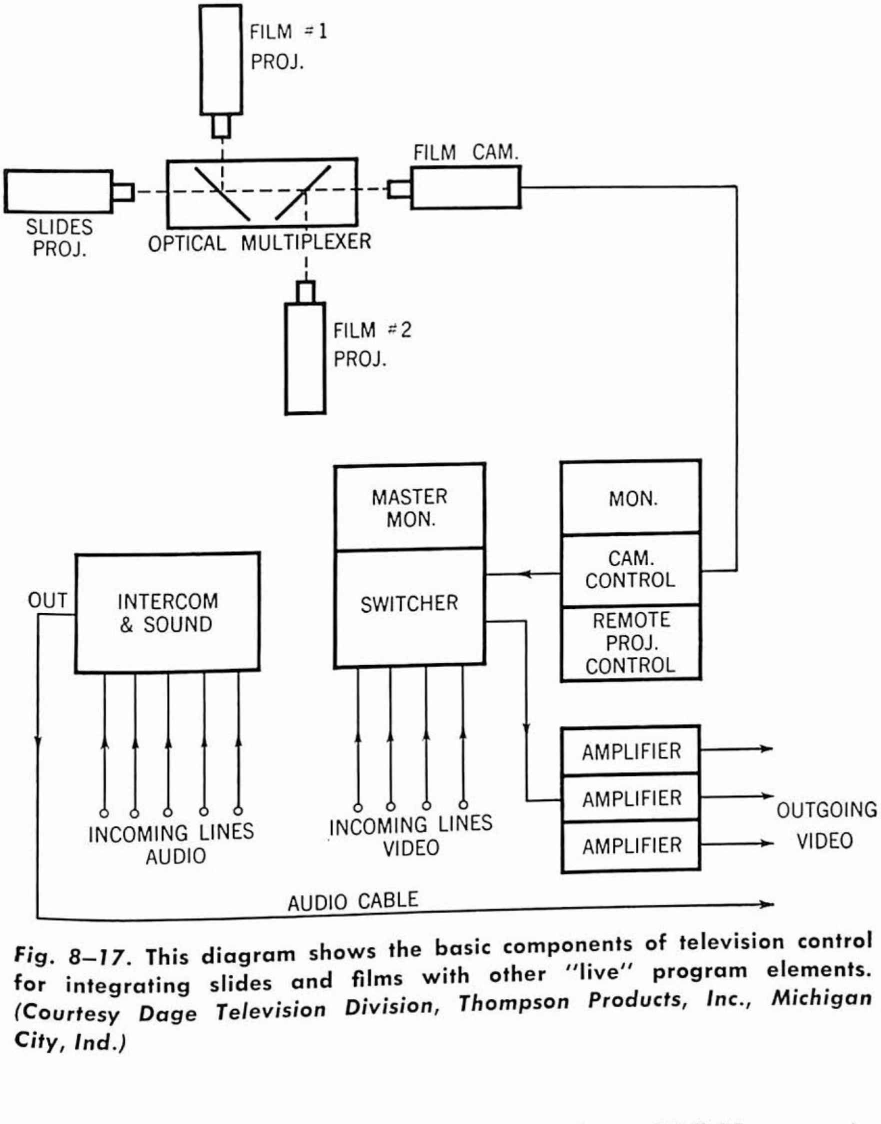


Fig. 8–17.* This diagram shows the basic components of television control for integrating slides and films with other "live" program elements. *(Courtesy Dage Television Division, Thompson Products, Inc., Michigan City, Ind.)

storage room with a minimum floor space of 7′ x 10′." However, in 1952, John R. Winnie, in charge of television development at the State University of Iowa, Iowa City, spoke[7] in glowing terms about his good fortune in falling heir to an old building with a 30-foot ceiling in which, to start with, he could build two studios, with the larger one being 85 feet by 45 feet and the smaller one 58 feet by 38 feet. He emphasized, also, the criticalness of sound control, height, adjacent storage, and flexible space.

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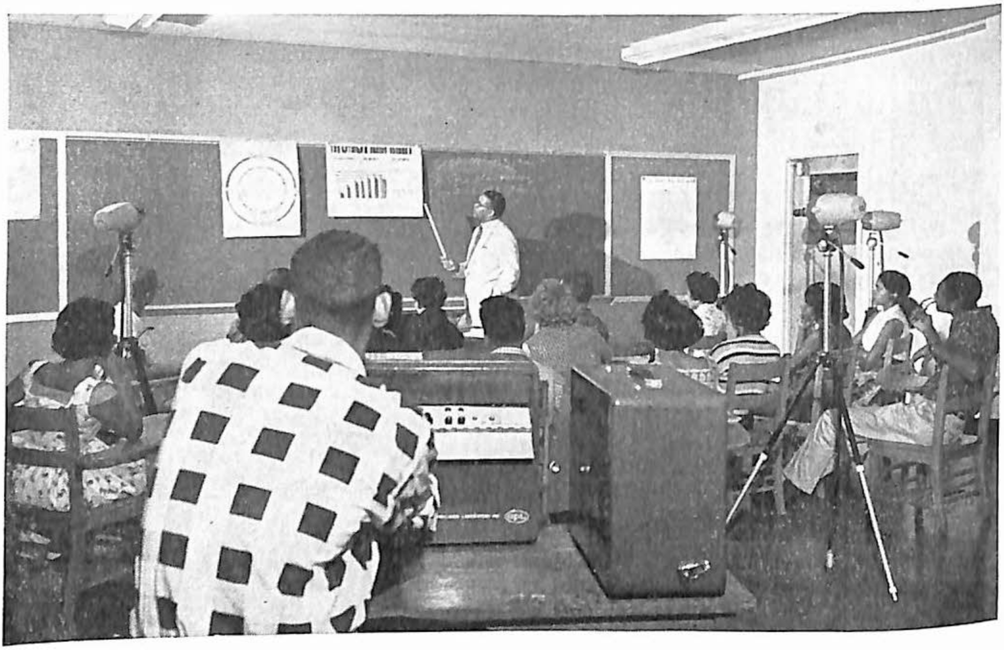
[7] *TV Ideas, Proceedings of Five Workshops Held at the University of Wisconsin During Summer of 1952*, Extension Division, Television Committee, University of Wisconsin, Madison, Wisconsin, 1952, pp. 45–46.

2. An important second provision for using closed-circuit television in teaching on a school-system production level is to equip several classrooms as auxiliary originating studios. Thus teachers may be televised to other pupil groups as they teach a regular class of their own. Special classrooms may be designated and equipped to meet specific requirements for science, social studies, home economics, and other instructional programs. Originating classrooms may or may not need adjacent control rooms. Audio pickup facilities may also have to be incorporated into such interconnected classroom studios so that students in viewing areas may ask questions of

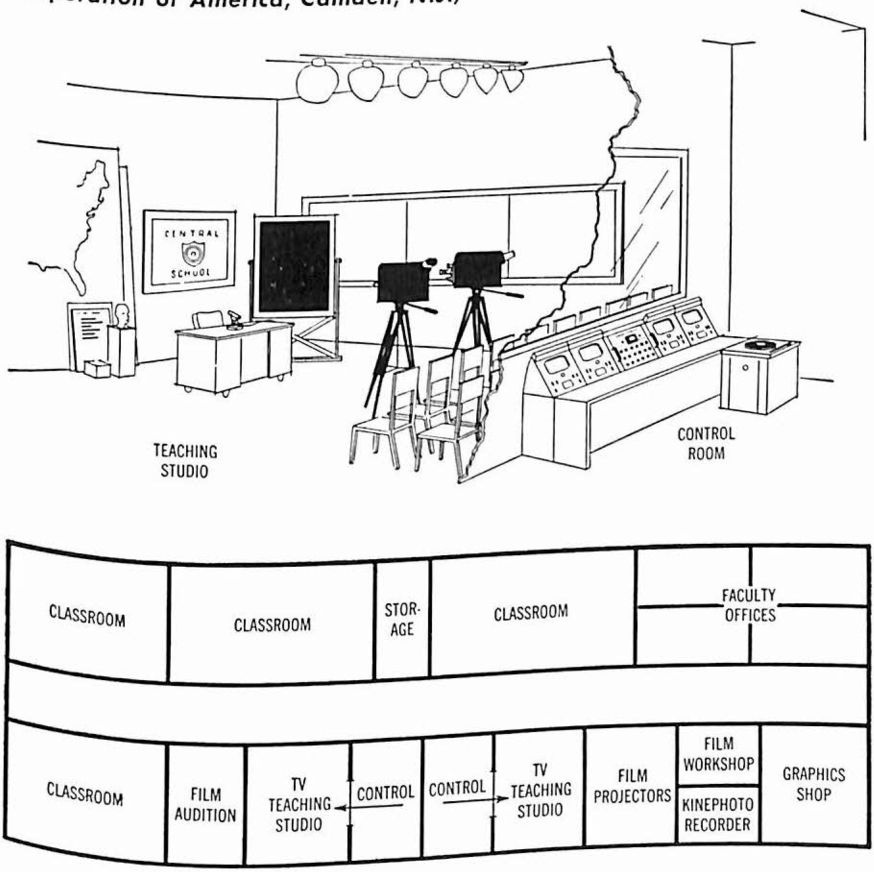
Fig. 8–18.* This instruction is being transmitted by closed circuit to other viewing rooms. See also Figs. 8–13 and 8–19. *(Courtesy Fisk University, Nashville, Tenn.)



instructors and demonstrators. Some of the possibilities for equipping auxiliary originating classrooms are:

(a) Mobile camera and control units may be wheeled into the room, as needed, or cameras may be set up on tripods, with control units being carried in portable cases. Such equipment units either can be plugged into appropriate connectors for distribution to the main distribution center or the video and audio signals can

Fig. 8–19. Such facilities as these in both new and old schools may be needed to make maximum use of instructional television. *(Courtesy Radio Corporation of America, Camden, N.J.)*



be sent via appropriate amplifiers and coaxial lines to viewing rooms in the building where the program is being originated. With Vidicon cameras, as compared with Image-Orthicon, higher illumination of subjects (100 to 200 foot-candles) is, of course, necessary, but this is not difficult to accomplish with proper lighting units either on floorstands or suspended from the ceiling. (See Figs. 8–18 and 8–19.)

(b) Two or more cameras can be mounted on ceiling battens together with lighting units for adequate illumination of the set. Such cameras can be switched on or off by the instructor as needed, thus eliminating, for certain productions, the need for an extensive technical crew. Under this system a monitoring technician ought to be available to adjust quality of the picture and operate a zoom-lens camera as desired. However, in any large-scale television production project, a full-time technical staff will be found to be indispensable. Accoustic treatment for all originating rooms would also be an essential for good quality productions.

The preceding discussion should serve to open up for the prospective director of audio-visual services a cluster of formidable problems, but these are not at all unsolvable. One thing is certain. The director should not delay in putting forth effort to understand the nature of the relationships that exist between TV and A-V for instructional purposes, and he ought to spearhead the formulation of appropriate plans of action regarding school television in his community.

Formulating Local Plans for Television. The audio-visual director ought to encourage the formation, by proper school authorities, of a local study and planning committee for television. One of the first activities of this group should be to examine the literature to inform themselves about the present experimental studies going on in communities the country over. Then, this group should try to sift the research findings, attempt to relate these findings to local instructional needs, and then decide on a course of action in terms of specific recommendations. To aid directors in carrying forward such work, a pertinent though not exhaustive list of references is given at the end of this chapter. However, by the very nature of this rapidly growing body of literature, it will have to be supplemented by up-to-date findings and discussions. Those who study the television problem need to weigh the evidence carefully and to look with a critical eye upon the over-optimistic pressure to use television in solving crucial problems of teacher shortage and increased enrollment. That which has been learned about effective teaching and learning ought not to be laid aside in an effort to introduce a new teaching tool. James M. Spinning's[8] good advice needs to be heeded:

> When it comes to the essence of teaching, it must still be the teacher as person, as person to person, who is central. . . . We need to adapt television to education, and only as we get a good crack at it, can we do that. But, at the same time, we need to adapt ourselves more completely to education. With or without television, we should take some of its virtues into our thinking, give more attention in all our teaching to the kind of planning and order, the sense of structure, the eye-and-ear appeal, the precise timing, and the over-all impact which are special musts for television.

Some Important Questions Guiding Decisions about Television. When a prospective or on-the-job director of audio-visual services reads the periodical literature on television in teaching, as he considers the brief discussion in this volume as it pertains to the expansion of local operations, and as he works with the proposed local TV study group, he needs to bear in mind many important questions, of which the following are typical:

1. Is the financial support for much of the early research in television motivated by desire to improve education? If not, what are the motives?

2. What, if any, similarities can be detected between the historical monitorial school system advocated and organized by Chevalier Paulet, Joseph Lancaster, and Rev. Andrew Bell (see Cubberley's History of Education, Houghton Mifflin, Boston, 1948, p. 626, and the hue and cry for large-group instruction by master teachers via television?

3. Why, as presently advocated, is a reasonably small teacher-pupil ratio desirable? What ought to be the single criterion for changing this belief?

4. Why has there never been, since the advent of organized

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[8] James M. Spinning, "The Teacher with the Audio-Visual Mind," *NEA Journal*, Vol. 46, No. 9, December, 1957, pp. 589–590.

city-wide audio-visual services in St. Louis in 1904, such enthusiasm, optimism, and research effort in connection with the motion picture and radio as there is presently for television?

5. Are there many cities, even today after a quarter-century of development and growth, where the motion picture is really available to teachers on an optimum-convenience basis? Why not?

6. What is the difference between using television as an effective teaching tool for use by the teacher and using television for direct teaching?

7. How can the motion picture be used instead of color or black-and-white television in medical schools? In place of electronic enlargement for large-group observation of teacher demonstrations in regular schools? In place of the master TV teacher?

8. What reorganization patterns for small school districts would you recommend for making use of centralized television services? Of audio-visual services in general?

9. What increases in specific local audio-visual services could be purchased with a sum of money equal to the cost for a local television production and distribution system?

10. What large-group instruction methods besides television do we already know how to use and provide?

The expansion of audio-visual center services into vital fields of effort, from books to television, is not likely to happen in spite of the director, but if it happens at all, it will be because of his own growth on the job. This was pointed out in Chapter Two as one of the essentials for expert performance. It now is clear that the audio-visual director must be at the start or must become through his complex expansion activities, a specialist in communications.

ASSISTING IN IMPROVING COMMUNICATIONS

It is unthinkable that a director of audio-visual services would engineer the development of photographic and graphic services, as well as other system-wide production activities, without preparing himself in one way or another for giving counsel in the improvement of communications throughout the environment in which he works. Many will be the opportunities not only to assist a school superintendent in preparing slides, transparencies, charts, and publications for public relations purposes, but also as a part of this process to assist in analyzing the existing barriers to effective communication. This same emphasis needs to underlie learning activities involving communication media on the part of teachers. Hence, through the expansion of audio-visual services into broader phases of production, the director needs to see to it that his own skills in communication are highly developed and that appropriate influence is brought to bear on teachers and pupils and on other school personnel as well. Such expansion of his own skill may require deliberate and painstaking effort coupled with serious formal study or vigorous informal self-teaching activity. His success at effective communication will certainly have a bearing not only upon his service to his superiors but also upon his own public relations program, which is the subject of the next chapter.

SUGGESTED ACTIVITIES

* 1. In addition to the usual services provided by most present audio-visual centers, what are the possibilities for expansion? Make a listing of the services in two parts: (1) one list to be made up of services not requiring an additional professional staff member but feasible with reasonable increases in budget, and clerical help or by using community volunteer resources, and (2) the other list to be made up of services or activities requiring greatly increased facilities, staff, and budget.

2. Locate in the literature examples of comprehensive programs of service in the United States. Prepare a short summary of the unique features of one of these programs and report it to the class by arrangement.

3. Suppose your plans for expansion are thwarted, how will you prepare to wage a battle to achieve your goals, providing, of course, that the fight is worth while and based on valid motives?

4. How would the conversion of an audio-visual center into an instructional materials center alter a director's role in in-service education as set forth in Chapter Three?

5. In any large-scale expansion program, how does a director prevent his evolution into a "glorified" warehouseman?

6. Work with others in the class who are similarly interested in developing a short but pertinent bibliography on maps and globes; then develop a workable set of criteria for selecting maps and globes for a school system.

* 7. Make a scale drawing of a desirable photographic production

suite for the audio-visual center headquarters in your city or for any other school situation of your choice; then consult one or more catalogs of photographic laboratory equipment, select the essential items, and locate them appropriately to scale on the drawing. Include with your drawing a list of the equipment items, being sure to indicate make, model, and cost.

8. What does the term *reciprocal school-community relationships* mean? What implications does it have for the A-V director?

9. Make a list of suitable radio programs that could be written and produced by secondary school students by recording them on tape and then subsequently distributed from the audio-visual center to elementary schools as a part of a school-system production-activity program. Specify subject and grade level of producer and subsequent users in the list you formulate.

10. Locate and study the format of samples of model scripts for a radio program, a color-slide set with tape commentary, and a pictorial and sound script for a magnetic-sound motion picture. In what ways are the processes for preparing such scripts similar?

11. Study how-to-do-it literature and using the materials and supplies available, produce the following 7-inch by 7-inch transparencies: (a) a handmade transparency, using colored inks and felt-nib pens; (b) a handmade master for making a transparency, using diazo-ammonia processes; (c) a handmade master, using diazo-ammonia process but also employing Constat camera film originals; (d) using the same process, obtain original graphic elements by means of a Polaroid-Land camera and 46 or 46L film.

* 12. Draw a sketch to scale showing a televsion production and distribution system for a high school of seventy classrooms. Show the following: (a) central studio, control room, storage room, and shop; (b) three auxiliary originating classrooms, one with control room and two without, one with three overhead fixed cameras, one with a mobile console, one with portable cameras and control units; (c) how the originating signal may be distributed either to central studio control room or directly to viewing areas; and (d) assuming that you intend to try using the television screen as a means of delivering regular motion picture films to classrooms instead of by projector and operator service, cut out small rectangles of cardboard to scale to show every piece of control room equipment needed, and arrange them for showing ten motion pictures simultaneously. Assume further that you are using the JAN television film-chain projector. (This means you must use catalogs of equipment manufacturers to get exact measurements of equipment, pedestals, multi-plexers, monitors, control units, etc.) Students ought to work together in teams of three or four to

do this exercise. Each team may use different makes or systems of equipment.

13. Make a list of the ways, other than those pertaining directly to classroom teaching, in which the audio-visual specialist could be of direct service to his superintendent, to the school board chairman, and to school principals and supervisors. Are you prepared to give this service now? If not, what skills should you set about learning?

14. What is the A-V director's usual role in working with system-wide committees and study groups? What steps can the director take to prepare himself for this widening scope of service?

* 15. Assume that you have been authorized to employ a full-time assistant whom you intend to place in charge of in-service education activities at the elementary schools for audio-visual methods. The official title is to be Audio-Visual Consultant for Elementary Schools. Write up desirable procedures for seeking and employing the right person for the job.

SUGGESTED READINGS

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CHAPTER NINE

PUBLIC UNDERSTANDING AND SUPPORT

In a letter dated December 19, 1955, just fifty years after the first city-wide service organization for visual education was inaugurated in St. Louis, the executive committee of the Department of Audio-Visual Instruction of the NEA felt compelled to issue a strong protest to the White House Conference Committee of the Department of Health, Education and Welfare, over statements in its formal report that classed *visual aid facilities* for both elementary and secondary schools as *desirable* but not *mandatory*. Such shocking pronouncements focused attention upon the apparent low level of real understanding on the part of the public everywhere as to the nature and real significance of audio-visual materials in improving learning. Little wonder that financial support for this phase of educational method is so pitifully low. Little wonder that there aren't more directors of audio-visual services in city school systems and more school-building A-V coordinators with released time from teaching. Little wonder that old schools are in general so poorly equipped and that the struggle has to be so great to include in new schools under construction the equipment and facilities needed for effective teaching.

The director of audio-visual services cannot long escape his responsibility to alter this situation by promoting a more favorable climate of support.

The director in a new position may discover that his efforts to promote good public relations will be greatly facilitated because of the existence of a well-organized and coordinated program established by his chief school administrator. He may find that high levels of good will, understanding, and support have already been reached, and in such fortunate cases he ought to keep the channels to public opinion active and supplied through continuing efforts. On the other hand, he may find that his school colleagues, through local failures of their own or because of a complex of local factors partly beyond their control, have failed to establish a favorable public relations environment. So, if the director finds his program has understanding and support, he needs to maintain and increase it; and if he doesn't have it, he certainly must take steps to obtain it.

He cannot, of course, carry on alone this complex business, but by whatever pattern or method his efforts are coordinated and related to those of others, he will have a dual role to play, namely, that of helping others use good communicative techniques for their own public relations programs on the one hand, and making sure on the other that his own service program in audio-visual methods is adequately understood and supported by all who are concerned. He needs to recognize the over-all problem of school-system public relations, and he must take necessary precautions to fit into a public relations organization as already established, striking a good balance between his own specific interests and the interests of others. If he is to be successful, he must analyze this local situation accurately before proceeding with his plans for action.

MAKING PREPARATIONS FOR ACTION

In preceding chapters, detailed plans have been recommended for adequate facilities by means of which teachers could put audio-visual materials to work effectively. Some of the facilities, especially for expanded programs at ideal operational levels, are costly indeed, and probably no superintendent, no director, and no one organization can singlehandedly bring about the understanding and support for the growth in services that have been set forth as desirable. If the director is to be successful, he must undertake to identify and utilize those forces that collectively, and in good balance with other aspects of the educational program, can lead to the acomplishment of established goals. This chapter will provide guidance for the director in reaching sound decisions as to what can be done locally to achieve his goals. Such decisions need to be based upon sound theory.

The Theoretical Basis for Promoting Public Understanding and Support. Throughout this book emphasis has been given to participation by those who are affected in the making of policy. This emphasis provides the theoretical basis of good public relations programs. Stated in simple terms, it is as follows: *Financial support and cooperation are likely to be greater when many people, laymen as well as professional, have a knowledge of, and are given a voice in, audio-visual affairs and have respect for the director both as a person and as a professional worker.* Olsen[1] asserts that the first principle of successful public relations may be stated thus, "If you want somebody to support a program, be sure that he understands its values and has shared with personal satisfaction in the planning and development of that program."

Both these statements imply that the layman has acquired knowledge and understanding, on the one hand, and has personally shared in making plans and decisions on the other. Both these implications must be recognized as constituting the two aspects of the director's effort in his public relations program, and the director ought to recognize the possibility that sharing in decision may well be one of the best routes to knowledge and understanding. Once again, looking broadly at the entire public relations program, the American Association of School Administrators[2] states in its Yearbook the following all-inclusive guiding principle, "Sound school public relations must be *honest* in intent and execution, *intrinsic* in the school program, *continuous* in application, *positive* in approach, *comprehensive* in character, *sensitive* to the publics concerned, and *simple* in meaning and conception." The director who develops maximum understanding of such principles will make few mistakes as he proceeds to organize and implement a planned program of public relations activity.

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[1] Edward G. Olsen (ed.), *School and Community*, 2nd. ed., Prentice Hall, Inc., New York, N.Y., 1954, p. 429.

[2] By permission. From *Public Relations for America's Schools*, 28th Yearbook of the American Association of School Administrators of the NEA, 1201 Sixteenth St., N.W., Washington, D.C., 1950, p. 17.

Enlisting the Assistance of Colleagues. One of the surest routes to good will of colleagues is to earn their respect by establishing a record of friendly, capable, industrious, and efficient professional service. If the director has followed suggestions already made in earlier chapters, he has worked closely with school principals in solving some of their supervisory problems, and he has won the support of the superintendent through his able reports based on accurate records, through his businesslike plans, and through his general professional workmanship. Of course it is likely that if the director has laid the groundwork for support by his superintendent, he doubtlessly has also developed understanding and support among the Board of Education members, but no opportunity ought to be missed to demonstrate the value of audio-visual techniques to the Board members as representatives of the community. In this connection the director should be alert to the opportunity to assist the superintendent and Board members in preparing audio-visual materials for their own contacts with groups within the community, thus promoting in the larger sense an understanding of and support for the total educational program. Such direct services to top administrators and Board members are often the most powerful means of gaining internal support for the specific program of audio-visual services.

The director should seek to know his colleagues, from Board members to custodians, and to become known, without being judged as currying favor in any form. Actually the director has a natural opportunity to become widely known among school staff members, and this may be an important professional asset for him. As a result of these activities internal to the school system, his status ought to be such that his understanding and talent for sound professional action are recognized. This is the foundation without which only limited success for the director's program is possible. The director ought to recognize also that he will have to enlist the cooperation of his colleagues for actual contributions of work in telling and showing the A-V story. For example, they will write accounts for him about their unique teaching activities; they will inform him when they sense that an activity has public relations value; they will take pictures, prepare scripts, give demonstrations, prepare exhibits, prepare leaflets, serve on committees to plan action; and in a host of other ways, both directly and indirectly through their pupils, they will implement an effective public relations program.

Public relations programs, in meeting the *comprehensive principle* mentioned earlier, need to involve all the staff and all the curriculum. The director, then, needs good will and cooperative endeavor from his coordinators, teachers, and their pupils; and from his superintendent and Board members, from his supervisory colleagues, and from school principals, he needs understanding and general approval to proceed creatively with public relations contacts, unhampered except for the usual clearance and approval formalities. Such freedom of action, once bestowed, must never be unwisely used, and here the director as a public relations man needs to be cautioned against failure to give appropriate credit where credit belongs. He needs to take care that he becomes the press agent not for himself but for the program whose growth is so vital for all instructional activity.

Planning the Public Relations Program. A good teacher will not only be a good planner of goals but will also plan the activities to accomplish those goals. It has been repeatedly emphasized also that any director of audio-visual services will be more successful if he defines his objectives and plans activities to reach them. The application of this procedure is just as valid for public relations programs. The directors needs to define the objective to be reached and then to plan with the appropriate people, his own helpers or those in a formal public relations organization, the means for reaching it. Some programs may call for intensive activity due to some crisis, that, despite carefully planned, long-term, continuous programs for understanding and support, may occasionally arise. Other programs need to be specific in appeal to highly selected segments of the community, and still other program efforts need to be very general in nature, including not only every parent but every resident, voter, and nonvoter. Sometimes it is essential that activities be planned for such specific segments of the public as the school board, the finance board, for town meeting participants, and sometimes for the residents who work in other cities, instead of residents who think and feel differently about the community because they have never lived anywhere else. Sometimes programs have to be planned solely for transmission by mass communication media. The director ought to make decisions about planning in terms of his sensitivity to various groups within the community; to fail to identify such groups and their characteristic attitudes, beliefs, and value patterns is to continue to operate ineffectively. The AASA Yearbook[3] puts it this way:

> In a limited sense to be aware of or sensitive to any public is to be aware of its basic drives or needs. It is not implied that the most primitive wants of man must be exploited in any vile sense to achieve success in public relations. In a more kindly interpretation, to be sensitive to and solicitous of these needs is an initial kind of respect to pay to an individual or to a public.

In achieving understanding of and support from various publics, both specific and general programs may have to be carried on simultaneously. That is, a steady flow of general-interest information may have to be directed to all publics at the same time that a specific program of activity involving talks and demonstrations, personal conferences with individuals, study-group activity, news releases, charts for town reports, and a graphically illustrated leaflet are directed towards school board members, town officials, and town meeting representatives for such specific purposes as obtaining an increase in the school's budget for:

1. Replacement of outmoded audio-visual equipment.
2. An experimental closed-circuit television studio.
3. Raising the motion picture library to a higher level of adequacy.
4. Including adequate audio-visual facilities in construction costs of new schools, etc.

Specific programs of action such as these need to be integrated with continuous program plans in order to avoid an excessive momentary concentration that few people understand or want and that a few individuals may have strong reasons for opposing. Directors who have developed the desire and skill to plan their action far ahead in terms of well-defined goals will put such individuals at a disadvantage because they will have mobilized facts and have devised methods of using forces to offset their predicted reaction. However, this points up the need for another important aspect of preparation for action.

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[3] *Ibid.*, p. 29.

Identification of Negative and Positive Forces. The director of audio-visual services may, whether he likes it or not, and despite all he has done to work effectively, sincerely, and intelligently, discover that he has a fight on his hands over the attainment of *bona fide* service objectives. The director may, of course, have come to the conclusion that such community conflict was inevitable, and his superiors may have even been willing to go for the showdown decision in his behalf. Now if the winning of such a decision is really important, then all favorable forces need to be mobilized calmly and effectively. But which forces are favorable? This question should not go unanswered, and it need not if the director is willing deliberately to identify these forces by thorough search. He may conduct a survey of the staff personally or by questionnaire, he may seek help from his colleagues in surveying the community, and he may have to seek the help of capable individuals in formulating his strategy. One thing is certain, a conflict in reaching an important decision should not be allowed to become anything other than a professional matter. The director needs to keep his facts straight and to maintain a calm composure; and if the decision goes against him, he should be in a position to accept it without personal injury, since he has presented the facts, explained them, and has earnestly sought to get people to decide on what they really needed. The director ought to recognize too that the identification of postive and negative forces is actually an application of the principle of sensitivity to a community's various publics. The anticipation of the beliefs and reactions of negative forces will not only be a valuable procedure in case of community-wide conflict, but it will also have its values within a staff organization.

One main route to understanding and support of the audio-visual services program is through citizen participation in study and decision-reaching processes. The other route is through an adequate comprehensive information-giving program for the various publics of the community. The subsequent sections of this chapter deal with these topics.

UNDERSTANDING AND SUPPORT THROUGH PUBLIC STUDY AND ACTION

The participation of all concerned in arriving at wisest possible audio-visual service policy has been emphasized in this volume as one of the major aspects of the director's leadership, and in Chapter Two a commitment to the principle of democratic action was recognized as an essential for expert performance. In this section the director is challenged to undertake an even broader participation, namely, that of citizen groups, in helping to study and find sound solutions for the major problems in connection with audio-visual services.

The Concept of Study and Action by Citizens. Historically, there was a time when school people believed that lay citizens should accept the decisions of school officials without question, an extreme authoritarian view. The next stage of development was an emphasis by school people on explanation or interpretation. The present evolution of the concept has reached the high plateau recognized now as one of mutual planning and cooperative decision. The concept of citizen participation as good public relations is stated by the American Association of School Administrators[4] as follows:

> Cooperative educational planning removes public relations from the realm of "telling" or "selling." In its stead there is created a genuine partnership, in which, through effective teamwork and a two-way flow of information and ideas, professional educators and representative laymen plan and re-plan for the education of children in terms of currently recognized needs. . . . Properly conceived and practiced, it becomes another of the foundation stones on which a sound structure of public relations is erected.

This concept needs to be applied by the director of audio-visual services as well as by the school-system's chief administrator and other curriculum personnel.

Levels of Participation. The director should realize that citizens may participate at different levels. Many so-called advisory committees listen to reports of progress, ask questions, discuss problems, and approve policy recommendations made by the director. However, while the advisory group often lends itself well as a harmless excuse for better, more active types of participation, the trend is toward *study* groups. In the preceding paragraph it was mentioned that the top level of participation was decision. Oberholtzer,[5] in his discussion of problems presented by citizen cooperation, pointed out that, "In general, there are six principal levels of activity which are open to citizen cooperation in education. They are: studying (including assembling data), planning, interpreting, deciding, executing, and evaluating. Cooperation may be typical of any one of these levels of activity, or of a combination of some of them, or of all." Perhaps some examples of each of the levels of participation just quoted would provide the prospective director of audio-visual services with helpful insights. Such examples follow:

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[4] By permission. From *Public Relations for America's Schools*, 28th Yearbook of the American Association of School Administrators of the NEA, 1201 Sixteenth St., N.W., Washington, D.C., 1950, p. 100.

Level	*A-V Example*
1. Studying (assembling data)	(a) Comparing the cost of equipping each classroom with the cost of building and equipping one or more projection rooms in each school building (b) Finding out the cost of expanded audio-visual facilities in all school plants
2. Planning	(a) How the audio-visual services may achieve better equipment and materials services in five years (b) How the schools may develop a language laboratory service program to increase foreign language skills
3. Interpreting	(a) The present language laboratory program (b) The present field-trip program of the schools

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[5] By permission. Kenneth E. Oberholtzer, "Cooperation Presents Some Problems," Chapter IV, *Citizen Cooperation for Better Public Schools,* 53rd Yearbook of the National Society for the Study of Education, Part I, University of Chicago Press, Chicago, Ill., 1954, p. 63.

Level	*A-V Example*
4. Deciding	(a) Whether or not to recommend that schools embark upon a closed-circuit television program (b) Whether or not to recommend that each school be provided with better A-V leadership
5. Executing	(a) A part-time, donated, secretarial service by parents for the audio-visual center in each school, including the central headquarters (b) An agreed upon plan for donating the use of private cars and personal services for delivery of audio-visual materials to school building
6. Evaluating	(a) The status of the audio-visual program and its services (b) The status of school-community relationships and specifically the schools' use of community resources

Limitations upon Citizen Action. In this connection, special attention needs to be given to levels four and five because, according to law, final decision (legislation, that is) is a prerogative of the officially elected board of education, an arm of the state's legal system. The director must recognize that he cannot expect decision and legislation except from the board of education itself. However, as a result of study, planning, and evaluating, any citizen group may make recommendations, which if supported by serious effort, evidence, and wide public acceptance, ought to be approved by the Board and, if possible, legislated into action or incorporated into its own formal recommendations for local law-making processes.

Some Suggestions. No rule of thumb can be given to the director who aspires to seek this pleateau of school public relations, but general principles are not lacking. Morphet[6] has formulated a set of guides for carrying out a cooperative program that points the way to good decisions. A condensed version of these guides follows:

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[6] By permission. Edgar L. Morphet, "Co-operative Procedures Should be Based on Sound Principles," Chapter XI, *Citizen Co-operation for Better Schools*, 53rd Yearbook of the National Society for the Study of Education, Part I, University of Chicago Press, Chicago, Ill., 1954, pp. 257–262.

> Participating groups and committees should understand their functions and limitations . . . should have latitude to explore all possibilities included in assigned problems . . . should organize properly for effective work . . . should select individuals who believe in cooperative endeavor for leadership roles . . . should adopt a written statement of purposes, policies, and working relations . . . should utilize all appropriate resources . . . should select as consultants capable persons who can work best in a cooperative program . . . should proceed logically and scientifically . . . should open meetings to the public . . . should adopt a working plan with definite termination dates for aspects of their programs . . . should meet as often as necessary to insure continuous progress . . . should develop constructive proposals to effect improvements in the educational program . . . should center their attention on principles and issues not personalities . . . should assemble evidence concerning desirable objectives or the characteristics of a desirable program should be used in evaluating the present situation . . . should recognize the need to facilitate cooperative action in general . . . should prepare an explanatory report giving findings and conclusions . . . should assist in interpreting the report to the board of education and possibly to the public . . . when such a cooperating group is undertaking a comprehensive study, it should serve principally as a policy committee.

The important implications for procedure for the director are quite obvious in this set of guiding principles, but a word of caution is in order. The inexperienced director of audio-visual services must make sure that he carries on such broader participatory activities in a context of action that the board of education and superintendent have initiated or advised him to initiate. The local climate for such action may be such that premature and unilateral action on the director's part may conceivably produce some unexpected and negative results.

In cases where cooperative planning is desirable, and the director believes that he is ready to take the lead in organizing for such action, he needs to ask the following questions: (1) What should be the ideal composition of the group that should participate? And (2) Who should activate the group? Some guidance in answering these questions is offered in the subsequent paragraphs.

The Composition of Participating Groups. Many believe that group composition above all ought to be representative of the agencies existing in any given community. Actually, membership on a lay-participation committee should be decided in terms of interest and recognized competence in cooperative action. The nature of the problem to be faced will largely determine the size and composition of the group, and it is the problem in relation to community needs that should be the focus of consideration instead of what a particular agency or party believes is appropriate. Another aspect of composition is the desirable balance between lay and professional personnel. There are no well-defined rules for such determination. The nature and scope of the problem will again have to be analyzed for guidance on this point. Certainly both lay and professional people will be needed in studying the types of problem likely to be proposed by the director of audio-visual services, and very probably these two groups should be represented in equal numbers. If the director is to make a sincere effort to promote understanding, he should encourage the selection of personnel who need to be included for their own education as well as for their potential contribution to group endeavor. In this connection it is desirable for one or more members of the board of education to be included, if they can be persuaded to accept and serve in addition to regular school board commitments. It is obvious that unless respected lay citizens are brought into the study program in optimum numbers, the underlying purpose of the activity will never be achieved. The best group for the inexperienced director to start with would be one composed largely of representatives of parent-teacher organizations. Working with and as a part of such a group, the director will find a cohesive organization already in existence and one that is generally well-informed, interested, and willing to make decisions.

Initiating Lay-Group Activity. As a general rule, invitations to membership ought to be extended by the school superintendent or through the central planning council, if there is one, and it is desirable for the director to serve, as an executive secretary, if not as chairman or moderator. However, the initiative for getting a study project under way may arise with lay citizens themselves, and such a group may call a meeting, extending invitations to professional personnel to participate. Also, in the case of specific problems at the school-unit level, principals and teachers may initiate action. Internal suggestions for action, as made by the director of audio-visual services, certainly should be made through principals and other curriculum personnel or through the school superintendent for proper orientation with over-all public relations plans. The director should not confuse this discussion with action taken quite regularly by a permanently organized group known and referred to repeatedly as the Audio-Visual Department Advisory Committee. Such a committee may, of course, be called into session by the director in accordance with established procedure. Initiation of other study and planning groups internal to the professional staff organization has already been discussed in Chapter Three.

The next section of this chapter deals with the director and his comprehensive program for developing understanding and support through good communications. Communication channels open to today's director of audio-visual services are many, and their use is included in the following discussion.

UNDERSTANDING AND SUPPORT THROUGH GOOD COMMUNICATION

People need to get the facts for intelligent thinking. When the facts are given honestly, simply, and accurately, people will be less likely to misrepresent actual conditions, invent and spread rumors, and be suspicious of what is going on. These are worthwhile benefits, but many directors still do not find ways to reap them. In improving skill in communication, the director needs to consider himself as a writer, an advertiser, a speaker, a reporter, a photographer, a visualizer, and a broadcaster; and to be effective in all these processes, the director needs to identify, understand, and bridge the barriers to communication that will face him. This is a formidable plan of action for self-teaching, and a decade of serious personal effort may be required to achieve it to any great degree of competency. The discussion and suggestions in this chapter open up the wide range of possibilities for action and are given as guides in making good decisions. The suggestions in connection with the various communication channels are more specific than general, as many basic principles and general suggestions have been stated in previous pages.

The Talking and Demonstrating Channel. This unique channel for understanding and support ought to be utilized effectively. Most personal and direct of the several channels, and possessing great potential for a telling impact and for the control of audience reactions, this medium for communication should be employed on a planned system-wide basis, principally for parent-teacher and civic organizations. The following suggestions are offered:

1. Formulate a series of three or four topics for each year, involving speeches, panels, and teacher demonstrations.
2. Make the programs available to PTA groups, but be cautious about flooding other civic groups with offers of free programs. Make up a schedule as near the beginning of the year as possible, and split up the work with volunteers from the teaching and coordinator staffs.
3. Help interested groups organize their own panel reports based on their own study of problems, and steer such studies into audio-visual methods areas. Use interested principals and board members on such panels wherever feasible and appropriate.
4. Make sure that teachers and others who are scheduled to speak or demonstrate, either with or without groups of pupils, are cooperatively selected and carefully chosen for their qualifications, and are given assistance in making adequate preparation.
5. In all personal performances the director should be thoroughly prepared and should make a top-notch presentation.
6. Illustrate talks by practicing what is preached. Use slides, transparencies, charts, motion pictures, tape recordings of youngsters' reactions, etc. If possible, produce high-quality visuals of school procedures and operations.
7. Whenever possible use a projectionist or an operator so that the director's full attention may be given to audience participation and reaction.
8. Think up catchy titles for talks.
9. Plan the exact time schedule with program chairmen, and make all projection arrangements ahead of the scheduled time for the meeting.
10. Know what concepts need to be put over and what abilities, if any, the audience should begin to develop; then plan activities, speech content, and audience reactions accordingly.

11. If necessary, work hard at developing speaking skills. Try to be unique in style, but be concise, natural, sincere, pleasant, and interested.

12. Use interesting content from everyday activities in the schools, and use everyday activities and instructional efficiency as the basis for any new recommendations or proposals offered.

The Press and Publications Channel. In using this channel, the director of audio-visual services becomes a journalist. He has to write stories for newspapers, prepare reports, prepare and edit copy for leaflets, take and select pictures, and he has to set up a system-wide plan for learning about interesting activities. Suggestions and directions for the use of this channel follow:

1. Stimulate interest in school principals for better press and publication projects, thus expanding the scope and opportunity for greater coverage of audio-visual services.

2. Call a group together to discuss publications and news reporting for the press for the school year.

3. Stimulate teachers to undertake audio-visual production projects involving picture-taking, model-making, and field-trip activity that may offer opportunity for picture-story reporting.

4. Arrange for a flow of items to the press, with two or more picture stories on audio-visual methods each year.

5. Produce on schedule a series of short leaflets carrying one or more illustrations to coincide with marking periods.

6. Use offset and letterpress processes for leaflets some of the time to break the monotony of routine duplication processes, thus making possible a higher quality of impact.

7. Clear all printed publications through the chief administrator, and develop skill to do responsible editing and proofreading.

8. Get help from volunteer staff members, but always screen material critically, edit it, reject it, or rewrite it, if necessary. Get help from journalism teachers, or involve them directly in planning press releases and preparing publications.

9. Get help from art teachers and advanced art students for illustrations in leaflets and for cover designs.

10. Propose changes and report needs far in advance to avoid shocks and crises.

11. Introduce research findings, make comparisons with pro-

cesses and procedures in preceding decades, and use visual presentations, both pictorial and graphic.

12. Take and use good pictures. That is, (a) concentrate attention on the result, process, and feeling by eliminating crowds of people; (b) keep relevant items in and distracting elements out; (c) look for the right youngsters, and if the teacher has picked several already, take the shot, then compose another substituting more appropriate subjects; (d) take several pictures, trying for facial expressions that reveal depth of reaction; (e) seek good backgrounds, or shoot downward or upward to eliminate them; (f) make sure clothes fit the action; (g) arrange subjects for optimum contrast; (h) crop pictures for maximum impact; and (i) determine and arrange for appropriate size to be used.

13. Supply appropriate captions with pictures.

14. Contact local newspaper editor and report meetings, conferences, and ideas for feature stories. Have facts ready with correctly spelled names, or when reporter calls for interview, have all pertinent materials, pictures, and illustrations at hand.

15. Try to develop a style of writing for newspapers and leaflets that gets away from professional terminology.

16. Keep a record of all news items and feature stories reported, and of all leaflets and other publications prepared, in order to plan for a variety of points of emphasis in successive years according to need.

17. Purchase and distribute, whenever feasible, specially designed and prepared publicity leaflets for public relations programs.[7]

The School-Exhibits Channel. Exhibits constitute a powerful means of informing a community about audio-visual services. (See Figs. 9–1 and 9–2.) This is especially true today in view of the many possibilities of using colored slides with synchronized tape commentary. Well within reach of any school system are the devices to project graphic stories about the school via automatic slides or continuous motion picture projection and to play continuous tape-recorded messages in connection with displays in store windows or buildings downtown. Too often it is taken for granted that the towns-

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[7] *Gateway to Learning*, and *Crisis in Education*, Audio-Visual Commission on Public Information, 250 West 57th St., New York, N.Y., 1957. (Price $10.00 and $3.50 per hundred copies, respectively.)

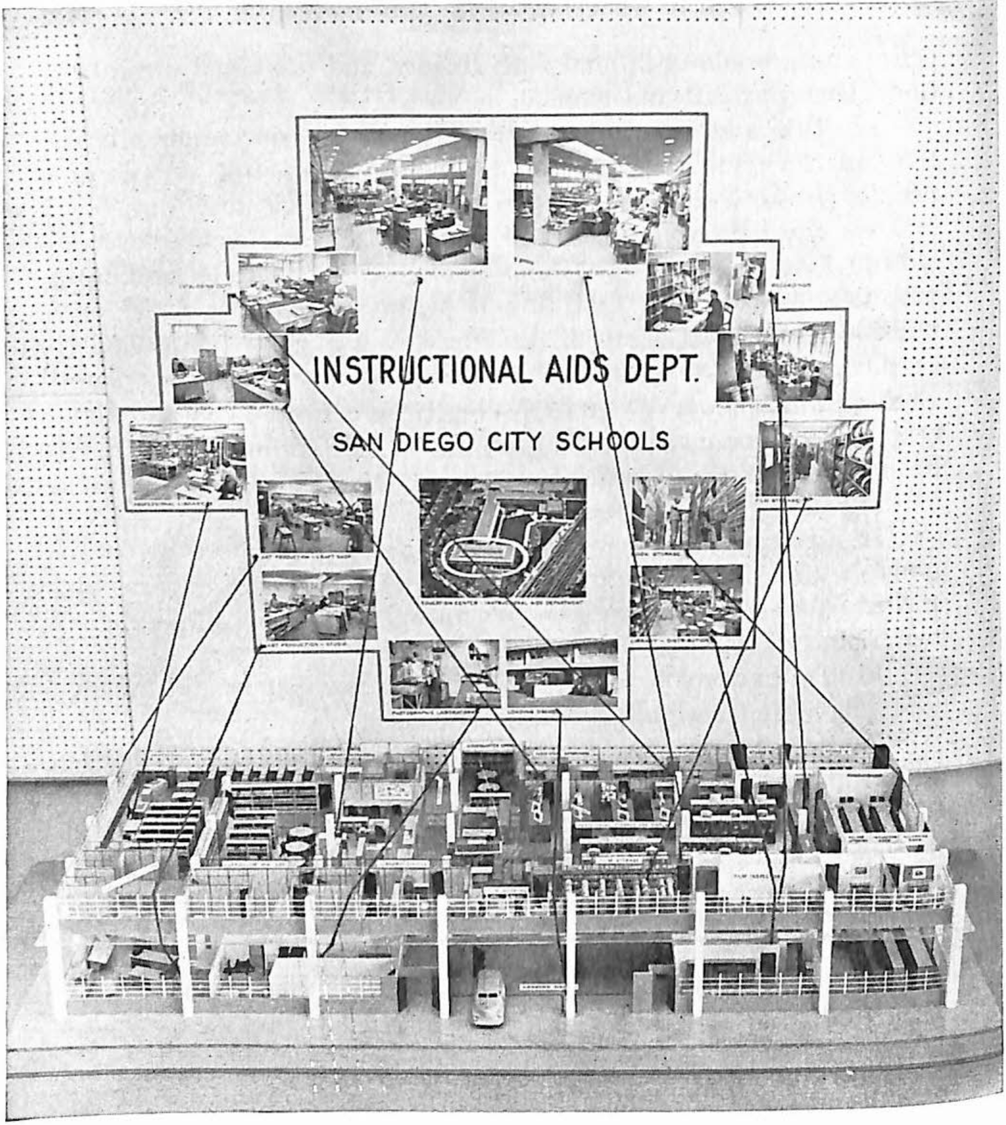

Fig. 9–1. In this effective exhibit, clear plastic floors afford a multi-story view of operations. *(Courtesy San Diego City Schools.)*

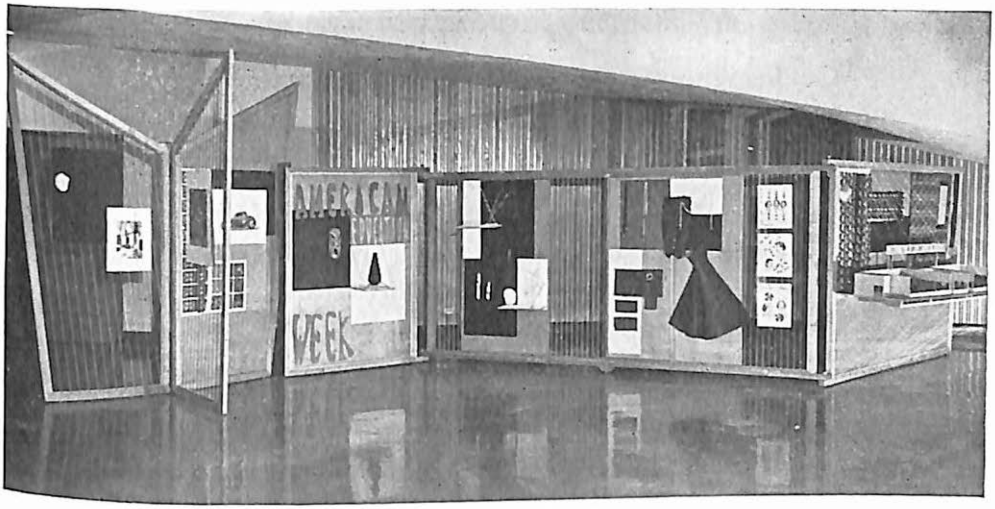

Fig. 9–2. Note the simplicity of construction in this exhibit frame here shown on display in a city show window. (Courtesy Dearborn, Mich., Public Schools.)

people and parents know what modern materials and devices are like. Attractive displays of modern devices such as unusual maps and globes, large attention-getting pictures laminated in clear plastic, Polaroid-Land camera transparency processes, overhead projectors, and overlays in color may provide new sights for many citizens who think they know what modern-day education is all about but actually have inaccurate concepts of processes and materials.

Probably most important of all are exhibits of those instructional methods whereby youngsters have produced and put into practical use various communication media. A few suggestions follow:

1. Construct easy-to-set-up exhibit frames for displaying photo enlargements and objects. Standardize construction and simplify the changing of materials to be displayed.
2. Use professional display principles and techniques.
3. Make use of pegboard techniques.
4. Plan a wide range of exhibits for various school-public meetings in advance.
5. Use colorful posters and charts in displays.
6. Make use of tape-recorded repetitive commentaries with displays, and use automatic picture-changers as well.

7. Get help from art teachers or from the sign painter downtown in solving display problems.

8. Plan for a variety of exhibit locations to reach citizens other than parents.

The Broadcast Channels of Radio and Television. Local radio and FM music stations are plentiful throughout the country despite the onslaught of television, and if directors have access to one of these stations, they should use it to the fullest extent. (See Fig. 9–3.) If a television channel, either commercial or education, exists in the area, the director should develop programs that will attract attention. Teachers and principals may prove to be experts in certain areas of subject matter or hobbies, and student groups may reach high levels of excellence in music, athletics, and dramatics; hence good program potentials may exist locally. In the first publication of the Audio-Visual Commission on Public Information, *Telling Your Audio-*

Fig. 9–3. This group of school and business people is shown listening to a tape recording just made for a local radio broadcast. ***(Courtesy Instructional Materials Center, White Plains, N.Y., Public Schools.)***

Visual Story, the Commission[8] gives the following advice about radio and TV:

1. Help arrange interviews and pupil activities on tape or in person. Don't overlook taped programs.
2. Prepare news releases for radio, too. Special "Weeks" are naturals for radio programs.
3. Approach commercial TV program managers with a well-worked out plan. They'll listen—but not to generalities.
4. Help find films for TV—they'll be appreciated.
5. Give a lift on other visuals when you can, particularly on small stations. This is a natural Good Will Builder.

But somewhere along the line the prospective director needs to get some help for his first appearance on TV. Irving Gitlin,[9] Director of Public Affairs, Columbia Broadcasting Company, gives the following advice.

(1) Don't lecture. Talk easily as though you are in a private conversation. . . .

(2) Focus your attention upon that one person in the one living room. . . .

(3) Try to regard the camera, which is staring you in the face, not as the probing eye of some supermachine from another age, but as a friend. . . .

(4) Be direct, straightforward, sincere. Resist that primeval urge . . . to ham it up. It won't work.

(5) Don't try to say too much in any one program . . . one novel idea in a half-hour show. . . .

(6) Keep what you say simple. . . .

(7) Don't read or memorize your lines. . . . Don't worry about fluffs—your audience will like you more if you are not so perfect.

(8) Don't be afraid to smile. . . . If you can enjoy your television appearance, your audience will, too.

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[8] *Telling Your A-V Story* (prepared by Audio-Visual Center, Michigan State University). The Audio-Visual Commission on Public Information, 250 West 57th St., New York, N.Y., 1956. (This leaflet is available for ten cents from the Commission. See also the Commission's booklet, *Gateway to Learning*, available in quantity for distribution within any community.)

[9] Irving Gitlin, "An Amateur on TV," *The American Psychologist*, Vol. 10, No. 10, October, 1955, pp. 618–619.

The director may organize student-teacher-produced programs arising out of classroom activities, or programs may be deliberately designed to communicate to the viewing public important content relative to the values of audio-visual methods in particular and about local educational problems in general.

One final opportunity for establishing desirable school-community public relations as it applies to the director of audio-visual services must not be overlooked in this discussion, and this opportunity is not without its problems.

UNDERSTANDING AND SUPPORT THROUGH AUDIO-VISUAL SERVICES

Audio-visual directors miss rich opportunities for action and service when they withdraw from community contacts by, for instance, living in another city, particularly when this prevents convenient participation in community affairs. This does not mean that the director needs to maintain office hours around the clock. It does mean, however, that many services to school people, community agencies, and citizens, of the direct consultant variety, as well as the indirect, person-to-person, after-work contacts, are by-passed.

Community Use of School Equipment. Many audio-visual centers say firmly, though sympathetically, "No," to agencies seeking to borrow the school's projectors and tape recorders. Some directors have no problem in this area because they find themselves in community-oriented school systems where it is not strange for the school plants to be in use daily (after school and nights, that is) for adult education purposes. School equipment is thus in convenient position for use, and with a night-school supervisor assisted by one or two trained, paid student projectionists, there is little cause for worry. In some cities, in accordance with wise school-system policy, a motion picture projector and a screen, and a slide projector are purchased out of school funds and set aside for loans to nonschool community agencies. However, there is little justification for a school's audio-visual center that does not have enough equipment to handle its own service commitments to loan a projector and screen to the local Boys' Club, for example, if it jeopardizes the showing of a scheduled instructional film in the first-period science class the next day.

Actually, therefore, the loan of A-V equipment to other community agencies may, while contributing to good public relations, work against the accomplishment of basic instructional services, and this should not be permitted to happen. The director should, if separate equipment for the purpose has not been purchased, consider recommending to the superintendent for approval a policy including at least the following basic elements (adjusted, of course, for local conditions). It is recommended that:

1. Only specified equipment units such as a motion picture projector and a slide projector and two portable screens are to be loaned to community agencies holding meetings outside the school.
2. No equipment is to be loaned outside the school system unless an unscheduled, similar-type unit is available and in good operating condition.
3. Loans are to be made only to community government agencies and to nonschool, youth-serving organizations, specifically for educational programs where admissions are not charged.
4. Loans of equipment are to be made at any time to school staff for professional-service meetings outside the school, provided that they are returned the day following the scheduled meeting in time for school use.
5. All loans are to be processed through the director of the school system A-V center, rather than through principals and A-V coordinators at individual school buildings.

Some Communication Services. While the school-system audio-visual center may not be in competition with local merchants, it may give some valuable advice to groups of individuals, on perhaps an adult education basis, on such topics as "Hi-Fi" playback and tape-recording systems and on the use of photographic and graphic production procedures especially needed in connection with the communication activities of other educational agencies. Workshops or clinics for community group leaders may be a good means of developing skills in making graphic presentations and in providing a high degree of self-sufficiency in such local agencies as service clubs, churches, women's clubs, the library, Y.M.C.A., boards of education, health, finance, PTA council, teachers' associations, the School Principals' Association, etc.

SUGGESTED ACTIVITIES

1. The emphasis on school interpretation programs has moved from autocratic pronouncements about what has been decided, through the explanation stage (one-way selling), to participation in decision. Make in outline form a comparison of the action to be taken under each of the latter operational levels as you would direct it as part of a public relations plan to develop understanding and support for the inauguration of the plan to use and remunerate school-building coordinators.

2. In what ways is the effective director of audio-visual services likely to become involved with public relations problems other than his own? Are such activities likely to enhance or impede support for his own program?

* 3. Study several references dealing with the barriers to communication. Make a list of the barriers that you can identify, and then explain how you would proceed to prepare public relations programs that would surmount any one or several of them in any single example of effort. Employ several of the communication channels in this plan.

4. Identify several hypothetical local condtions that may cause serious trouble for the director who attempts to engage unilaterally in community participation programs.

5. Why would local PTA groups and the PTA council constitute a more propitious level than the broader community committee at which the inexperienced director of audio-visual services could begin his use of the cooperative planning, study, and decision technique for public relations?

6. Set up an appropriate hypothetical study problem; then (a) state the desirable size and composition of the participating group, (b) show how you would apply each of Morphet's principles as quoted in the chapter.

* 7. Prepare topics and ideas for at least two talks to be given before PTA groups in your town to build understanding of and support for effective use of A-V materials. The outline must be complete with *interesting* titles.

* 8. Plan out a picture story for reporting an interesting, significant, and newsworthy school activity centered around audio-visual methods in the classroom.

9. List three appropriate paragraph headings dealing with audio-visual materials that are indicative of a section that may well be included in an annual town report by a superintendent of schools.

* 10. Work as a member of a class committee planning a series of talks and demonstrations for a period of three years for a hypothetical community. Indicate how the plan would be operated and how many people would be involved for the desired coverage of PTA and local civic clubs.

* 11. Make a list of five topics for each of the following audio-visual production projects for use in public relations programs, specifically for your own department: (a) sound motion pictures with either optical or magnetic sound; (b) slide-sets in color; (c) slide-sets in color with tape-recorded script; (d) spot radio announcements; (e) educational television programs of 15 minutes each; (f) flip charts in sets; (g) tape recordings to be used as short illustrations only, not as radio programs; (h) exhibits for store windows downtown; (i) exhibits for school PTA meetings.

* 12. Select any school picture of your choice, preferably no smaller than 5 inches by 7 inches, and prepare the picture for a publisher by indicating on an overlay sheet the following: (a) exact limits for cropping the picture, (b) the size of picture desired for publication, and (c) the caption that is to accompany the picture.

* 13. Use the criteria listed in this chapter in criticizing school-activity pictures brought in by class members for analysis.

* 14. Take whatever steps are deemed necessary to give yourself an objective rating on the factors that lead to an acceptable appearance for contacts with lay and professional publics. If you are employing an assistant for public relations work, would you pay any attention to the good-grooming habits of the applicants?

15. Study examples of outstanding, graphic, public relations leaflets, annual reports, and promotional flyers; then design a pictorial leaflet on audio-visual methods for distribution to every home in your own community, or if a hypothetical city has to be chosen, one of known characteristics.

16. Make a survey of the public relations programs being conducted in any ten cities of your choice where centrally organized audio-visual service programs are known to exist.

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(Refer also to references in Chapters Three, Six, and Eight that deal with the production of audio-visual materials for communication purposes.)

CHAPTER TEN

SYSTEMATIC EVALUATION

IN the preceding chapters the prospective director has been urged to be a good leader, to be critical, to identify teaching objectives, to discover and remedy weaknesses in teaching competence, to acquire essential materials and equipment, to facilitate use of materials, to develop a service organization, to get the facts, to make long-term plans, to develop public understanding, and to seek optimum growth. He has been urged at the turn of every page to become a superman in terms of what is considered to be desirable practice. He has been urged, in effect, to disregard the fact that only meagre support is being given most everywhere throughout the country and to proceed to build a staff to do a world of work, without pay if necessary, in the hopes that citizens will finally buy and pay for the kind of A-V service program in peace that they eagerly accepted as essential when the chips were down in war. But this is not all. In this chapter, the director will be urged to evaluate systematically the audio-visual program in order to effect desirable changes in his own administrative performance, desirable changes in teachers, desirable changes in pupils, and desirable changes in the scope and quality of service being rendered.

THE NATURE OF THE EVALUATION PROCESS

Emphasis needs to be placed upon systematic evaluation because of the tendency to lose sight of important long-range goals in the pressure of day-to-day problems. When a plan for making appraisals is formulated and carried out by the director and his colleagues, a number of significant benefits are likely to result that are worth the time and effort involved.

Reasons for Evaluation. The underlying reasons for evaluation determine the nature of the benefits derived, and the main reason for appraisal is to discover pathways to the improvement of audio-visual services in general. A secondary reason, but also an important one, is the use of an evaluation process as an experience for personal growth of those individuals who do the painstaking work of measuring and evaluating, the director included. The director needs to realize, therefore, that unless he involves others in the process, he may be unable to realize the full potential value of his efforts. Teachers who are asked to evaluate the director's administrative and supervisory performance may be also led to look a little deeper and more critically perhaps at their own techniques and performance with audio-visual materials. And since teacher competence is such an important aspect of the director's supervisory role, he cannot afford to miss this important route to professional growth. In addition to this, the director needs the help of teachers to complete the actual work involved.

The Basic Process of Evaluation. Evaluation is basically a process of making value judgments based on observed evidence in relation to desired changes. As a part of this process certain tests (even of the paper-and-pencil variety), self-analysis check lists, anecdotal records, opinion forms for both teachers and pupils, and rating scales may be put to work in the sense of *measuring* the present status. However, it is the emphasis upon growth toward valid goals in qualitative as well as quantitative characteristics that makes the process one of evaluation and appraisal rather than measuring and testing. Implicit in the entire process is a set of standards clearly understood by all who participate. While the process of evaluation is being discussed here in its application to the audio-visual program, its relationship to comprehensive appraisal should be noted. J. Wayne Wrightstone[1] explains the outcome of comprehensive evaluation as follows: "Truly comprehensive evaluation provides evidence of the degree to which important curricular purposes are being realized." In a very real sense, evaluation of the audio-visual service program has the same reference point, curricular purpose, because it either fails or succeeds in terms of its contribution to improvement of learning where it counts most, in the learner himself. Obtaining evidence and making good judgments, however, are not easy human tasks.

Writing about evaluation of change in in-service education programs, Virgil Herrick[2] explains clearly what the evaluator's task is, and this task is applicable as well to audio-visual program analysis. He writes:

> In general the changes that are desired in programs of in-service education have to do with adequacy. We desire those changes that enable people to become more adequate as persons, as teachers and administrators, and as members of the school staff. We desire those changes that contribute to more adequate educational programs for children and youth in individual classrooms, in specific school programs. . . . The determination of the presence of change is essentially the problems of determining differences over time in the phenomena being observed. These differences can only be determined when it is possible to determine clearly either a beginning point or a goal toward which behavior is directed. Change under these conditions can either be determined by the difference that exists between the starting point (first observation) and the present position (second or last observation) on a behavior continuum or the difference that exists between successive operations of behavior and the goal to be achieved.

Herrick[3] also pointed out significantly that "As one moves from the questions of perceiving the presence of change to the ones of determining amount, rate, and direction of change, the problem of valuing these aspects of change becomes more important." Little wonder that in the past, save for a few heroic efforts such as, for example, the *Cooperative Study of Secondary School Standards*, efforts of school personnel in general and directors of audio-visual services in particular have dealt largely with quantitative instead of qualitative evaluation criteria. It is a relatively simple matter to discover that the school system has sixty motion picture projectors, a gain of ten over the preceding year, and that according to a five-year goal of one hundred projectors, the rate of change was satisfactory. It is not so simple to find out how many teachers had improved in what ways, at what speed, and to ascertain if such changes were satisfactory.

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[1] J. Wayne Wrightstone, "Evaluation," *Monroe's Encyclopedia of Educational Research*, rev. ed., W.J. Monroe, (ed.), Macmillan Co., New York, N.Y., 1950, p. 404.

[2] By permission. Virgil E. Herrick, *In-Service Education*, "The Evaluation of Change in Programs of In-Service Education," Chapter XIII, 56th Yearbook of the National Society for the Study of Education, Part I, University of Chicago Press, Chicago, Ill., 1957, pp. 312–313.

[3] *Ibid.*, p. 314.

This problem points up the possibility of the evaluation process operating at various levels of concentration and efficiency. The director needs to identify and understand these various levels of operation because he must judge and recommend the use of presently available evaluational instruments or take steps to construct new ones more appropriate for the local situation.

Levels of Action in the Evaluation of Audio-Visual Services. Evaluation of the audio-visual program may function at a number of identifiable levels of action. In each of these levels the involvement of the director, the role played by colleagues, the degree of refinement of the measuring instruments, the criticalness of the observation, the nature of the judgments of value, and the quantity and quality of benefits may be expected to vary. A description of such operational levels follows in order of least to greatest involvement of people:

Level 1: The director evaluates services annually by scrutinizing, summarizing, and generalizing the data collected for his record-keeping system. He writes a report based on his findings, emphasizing comparisons, changes, and needs. He finds out what each individual school is doing as regards ordering materials. He also summarizes his own activities and totals the number of in-service education contacts made. He collects reports from his staff of school-building A-V co-ordinators in accordance with previously agreed-upon plans that reveal the number of teachers using audio-visual materials professionally.

Level 2: The director operates usually on level 1, but he also decides to obtain and make use of, on a personal basis, one or more of the available evaluation check lists, as comprehensive in nature as possible, such as the Schwartz,[4] Durr,[5] Audio-Visual Instruction,[6] Donner Summit Workshop,[7] or the criteria listed in this chapter. Such self-scrutiny or self-evaluation takes place from the standpoint of his own personal performance, and the director seeks to make a judgment about the adequacy of the present status of facilities and the nature and extent of services being rendered. It is expected that at least the Donner Summit listing for personal performance and one of the comprehensive lists of criteria will be checked off and the shortcomings and strengths noted for building an improvement plan.

Level 3: The director performs according to *level 1* annually, has also completed a *level 2* operation, and in addition he solicits the aid of a system-wide representative committee or other group to assist him in preparing a measuring instrument for evaluation in the form of a teacher questionnaire. The questionnaire will be distributed annually at the close of the school year to call in reactions and judgments of the teaching staff regarding vital aspects of the center's service, plus their judgments about the quantity and quality of their own personal selection and professional use of materials. This instrument should be bold enough to call in reactions to the director's personal performance, taking the precaution of calling for criticisms on a constructive basis.

Level 4: The director cooperates with and participates in the

[4] John Charles Schwartz, Jr., *Evaluative Criteria for an Audio-Visual Instruction Program*, Wm. C. Brown Co., Dubuque, Iowa, 1950.

[5] William H. Durr, "What is Your School's I.M. Quotient?" *Planning Schools for Use of Audio-Visual Materials, No. 3 AV Instructional Materials Center*, Department of Audio-Visual Instruction of the NEA, 1201 Sixteenth St., N.W., Washington, D.C., 1954, pp. 77–79.

[6] "Profile Your A-V Program," *Audio-Visual Instruction*, Vol. 2, Issue 7, October, 1957, pp. 208–209. Also, *Evaluative Criteria for Audio-Visual Instructional Materials Services* (a project of the Committee on Accreditation of Secondary Schools), Department of Audio-Visual Instruction of the NEA, Washington, D.C.

[7] *Report of Donner Summit Workshop*, State of California Department of Education, Bureau of Audio-Visual Education, Sacramento, Calif., 1952. (Mimeographed.) (See also Edgar Dale, *Audio-Visual Methods in Teaching*, rev. ed., Dryden Press, New York City, N.Y., 1954, p. 518.)

evaluation of a school or group of schools as carried on by a visiting team of evaluators. Such evaluation takes place on a comprehensive basis, including the entire instructional program of which the audio-visual services as utilized by teachers are a part. Emphasis is placed upon instructional outcomes and the degree to which desirable standards are reached in the school's program. In connection with established criteria for either secondary schools[8] or elementary schools,[9] an additional questionnaire, especially prepared and approved by visiting teams and the teachers themselves, is made use of in collecting evidence for judgments.

Level 5: The director performs according to *level 1*, has completed *level 2* and *level 3*, and in addition he sets up, with the help and advice of the superintendent, principals, and other supervisors, a team of evaluators for the elementary schools and a team of evaluators for the secondary schools. These teams study the peculiar problems of evaluating audio-visual service programs and have the advice of several consultants from other audio-visual service centers, both city and university. Such teams study comprehensive available evaluation check lists[10] and statements of general criteria, developing a basic checklist for services and two specific checklists for the appraisal of the way in which the program is functioning in the lives of learners in elementary and secondary schools. Meetings are scheduled for respective staffs, with the evaluating teams and the director participating, to report, explain, and call for suggestions regarding the check lists prepared for individual teachers and for the students as well. Individual teachers distribute and collect pupil replies to the questionnaires, but teachers are free to choose whether or not they will participate in the survey of their pupils; also teachers are free to study pupil replies before turning them over to evaluation teams. Pupil replies are not to be signed.

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[8] *Evaluative Criteria, 1950 Edition*, Cooperative Study of Secondary-School Standards, Washington 6, D.C., 1950.

[9] *Elementary Evaluative Criteria* (research project), James F. Baker and Students, Boston University, School of Education, 332 Bay State Road, Boston 15, Mass.

[10] John Charles Schwartz, Jr., *Op. cit.* See also *Evaluative Criteria for the Audio-Visual Instructional Materials Services* (a project of the Committee on Accreditation of Secondary Schools), Department of Audio-Visual Instruction of the NEA, Washington, D.C.

As can be seen, the preceding levels offer a wide range of evaluational activity for the director. *Levels 4 and 5* may well take place once in every five to ten years, *levels 1 and 3* annually, and *level 2* possibly every time a new check list is developed or possibly every three years as a minimum. In all the levels there is a need for analysis according to a system of standards or to a system of objectives, and the refinement in the observation called for depends upon the established criteria. The director needs to be able to judge the appropriateness of available check lists and to construct, whenever they are needed, evaluational instruments that will be applicable in the local situation. The important topic of criteria for appraisal purposes is discussed in the section that follows.

CRITERIA FOR JUDGING CONDITIONS AND CHANGES

The Cooperative Study of Secondary-School Standards has had a marked influence on the development of educational evaluation, audio-visual service programs included, since its organization in 1933. The development by Schwartz[11] of criteria for evaluating an A-V instructional program according to its plan and format is just one example. Since it is likely that the local director may have to devise his own measuring devices, he needs to know the sources of criteria. He may then formulate a comprehensive system for obtaining needed evidence, or he may with his colleagues decide to concentrate efforts on a few vital aspects of his services and their impact on learning; for example, in-service education and school-building personnel services. The identification of criteria in this section is followed by a discussion of their employment in the next main topic that deals with local evaluation instruments and procedures.

Sources of Criteria. There are many easily identifiable sources for the criteria by means of which an audio-visual services program can be measured, and several of these have been already presented in preceding chapters. Basically, these sources are (1) leadership principles (the way the director works with people); (2) service principles (beliefs about what the program should try to do for each school and each teacher); (3) principles of learning and teaching and curriculum development (the framework of beliefs for all teachers' decisions); (4) principles for the utilization of A-V materials (the guideposts for relating materials to all learning activity); (5) the roles that materials play (different ways materials can help teachers teach); (6) principles of in-service education (desirable ways of building teacher competence locally); (7) minimum standards for school-building service centers and the central headquarters as well as for facilities and equipment for facilitating teacher use (basic physical needs for operating the service program); (8) minimum standards for personnel services in each school building (basic professional technical and clerical help for teachers); (9) desirable expansion and growth of services (the rate of growth for meeting instructional needs); (10) principles of budgeting (the financial support basis for operating a service program); and (11) principles of public understanding and support (the ways in which professional and lay citizens plan and make recommendations).

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[11] John Charles Schwartz, Jr., *Op. cit.*

To make a full statement of the criteria for an evaluation, the director has but to examine each chapter of this book for service program standards and then, in addition, expand as needed the statement of utilization principles as stated in Chapter Two. This is a big order and this kind of exhaustive summary and restatement of items already discussed is not called for as a part of this chapter. However, it will be of service to the creative evaluator if some of the basic questions and their implications in still more specific questions are stated as focal points for observation and analysis. Such basic questions represent general criteria and standards in terms of the over-all program of service, and of course, as local evaluation programs are undertaken, they must be further broken down into additional questions specific enough to permit penetrating observations to be made.

Focal Points for Observation and Analysis. Using the sources of criteria identified in the preceding paragraph, several broad questions have been formulated to represent the general criteria for a comprehensive appraisal of the audio-visual service program. Each of the major questions is then analyzed further to show how specific criteria are defined for more specific observation. The reader should note that the content of preceding chapters is the source of criteria.

1. *Is the leadership performance of the director adequate for obtaining competent effort of the staff in achieving the purposes of the service organization?*

a. Does the director obtain teacher participation in the making of decisions that affect their activities and responsibilities?
b. Does the director get the facts before making plans and decisions?
c. Does the director help the group to define purposes for action?
d. Does the director act vigorously?
e. Does the director possess personal and professional integrity?
f. Does the director develop new skills?
g. Does the director welcome and consider suggestions made by colleagues?
h. Does the director seek the personal development of colleagues and his own staff members?
i. Does the director make sound decisions?
j. Does the director like to work as a member of a team?
k. Does the director mobilize information and enlist the services of people effectively?
l. Does the director possess executive ability?
m. Does the director understand and apply the principles of good teaching?
n. Does the director have adequate technical knowledge?
o. Does the director define problems and goals for his plans of action?
p. Does the director take prompt action?
q. Does the director take action in terms of a curriculum reference point?
r. Does the director analyze a situation correctly?
s. Does the director make recommendations in terms of long-range plans?
t. Does the director lead groups in the study of vital problems likely to affect the future of the service program?
u. Does the director ever have new ideas?

2. *Are materials and equipment made available to teachers, in adequate variety and quantity when needed, with a minimum of distraction and inconvenience?*

a. Do teachers use materials in their classrooms?
b. Where classrooms are not yet being used for audio-visual projection purposes, is the environment of the projection room conducive to learning?

c. When classrooms are not yet being used for projection, can the teacher move the class without serious disruption?
d. Is the classroom light-control system adequate for each teacher?
e. Are other classroom audio-visual facilities adequate: Outlets? Bulletin boards? Modern chalkboards? Projection screen?
f. Can each teacher obtain material and equipment on time with confidence?
g. Is it easy to order materials and equipment?
h. Does the teacher have access to a well-trained projectionist crew for delivery and operation of equipment on schedule?
i. Is it easy for each teacher to find out what materials are available?
j. Does each teacher select his or her materials?
k. May the teacher obtain professional help at both central and at the school-building level?
l. Does each teacher know which materials are basic and which are supplementary in nature for the existing curriculum plans?
m. May each teacher have access to a sufficient variety of materials in planning needed educational experiences: Realia? Field-trip exhibits? Models? Mock-ups? Motion pictures? Television programs? Transparencies? Slide sets? Filmstrips? Study-print sets? Opaque projector material? Radio and audio programs on tape or disk? Maps? Globes? Charts? Production supplies: motion picture film stock? still picture film? Polaroid-Land transparency film stock? etched glass? slide crayons? cover glass? binding tape? slide masks? magnetic tape? Flannel boards? Bulletin boards? Display supplies?
n. Is it easy for teachers to examine materials before regular classroom use?
o. Is the school-building service-center space large enough to facilitate giving assistance to teachers?

3. *Is the growth and expansion of the service program proceeding in accord with well-thought-out, long-term plans?*

a. Have teachers participated in detailing needs for materials, equipment, and classroom facilities?
b. Have the facts concerning the needed specific items of equipment, based on a valid, comprehensive survey, been summarized and incorporated in annual purchase plans?

c. Have adequate priorities for materials and equipment been established?

d. Have annual purchase plans for all needed items been incorporated in written, five to ten-year growth plans: materials? equipment? classroom light-control systems? classroom electrical outlets? classroom bulletin boards? classroom chalkboards?

e. Have plans been made for new services in terms of teacher study and participation in decision? Radio? Television? Photographic production? Graphic production?

f. Is the rate of growth geared to a specific, desirable level of program operation?

g. Is the rate of progress toward the desired operational level satisfactory?

4. *Do the in-service education activities reflect the best concepts of teacher growth and an adequate understanding of the learning process?*

a. Do teachers participate in defining goals and problems and in formulating in-service education plans?

b. Are in-service activities planned, organized, and conducted in terms of known teacher needs?

c. Have priorities for teacher instruction been established?

d. Has adequate information about teacher status and needs been accumulated and tabulated?

e. Is the rate of progress in teaching desirable teaching skills satisfactory?

f. Have talented and skilled teachers been properly identified and their assistance enlisted for the in-service education program?

g. Are in-service education activities organized so as to be repeated in other schools according to need?

h. Are teams of workers utilized as staff members for in-service education group activities?

i. Are mass media of communication being put to work? Bulletins? Magnetic tapes? Television? Large-group methods?

j. Do teachers receive full credit for contributions made?

k. Do teachers engage voluntarily in in-service learning activities?

l. Do teachers have opportunities to engage in a wide variety of experiences in the in-service education program?

m. Do the learning activities engaged in by teachers as a part of the in-service program represent examples of excellent teaching procedure?

n. Is the central office staff large enough to carry on in adequate fashion the desirable in-service programs?

o. Does the director work effectively through and with other supervisors and principals in conducting the in-service program?

p. Are several channels for organizing teacher learning activities utilized: teachers' meetings? extension classes? short courses? workshops? institutes? reading programs? committee and individual service projects?

q. Are new teachers provided with opportunities for rapid A-V skill development?

5. *Is teacher performance with A-V materials creative and significant or stereotyped and unimaginative as far as pupil activities are concerned?*

a. Does the teacher base his selection of audio-visual experiences upon valid teaching objectives, upon high quality of the materials themselves, and upon the unique characteristics of a specific group of learners?

b. Does the teacher insist on being familiar with content of materials before their use in class?

c. Does the teacher engage in novel learning experiences with youngsters in the field of production of audio-visual materials: radio programs? motion pictures? slides? slides and tape commentary? maps and globes? exhibits? dioramas?

d. Does the teacher choose materials in terms of pupils' interests and comprehension?

e. Does the teacher build an attitude of readiness before projecting materials?

f. Does the teacher use a variety of methods for building readiness: a group problem? many minor problems?

g. Does the teacher conceive of interest as a "means" not an "end" in itself?

h. Does the teacher use his own knowledge of educational objectives as a means of setting up problems or directing observation before the showing of a motion picture or the use of a filmstrip?

i. Does the teacher display resourcefulness in organizing and planning the use of audio-visual materials?
j. Does the teacher plan the beginning and ending of projection periods satisfactorily?
k. Does the teacher use students to help with projection tasks?
l. Does the teacher devise optimum seating or observation plans for viewing and listening to or otherwise observing audio-visual presentations?
m. Does the teacher know when audio-visual equipment units are not operating properly?
n. Does the teacher judge accurately the adequacy of darkening systems for various types of picture projection?
o. Does the teacher use objectives as a means of deciding what questions to ask and what practice by students is needed?
p. Does the teacher ask thought-type questions?
q. Is the teacher willing to attack problems with students whose solutions are unknown at the point of departure?
r. Does the teacher display imagination in setting up unique, challenging problem-solving activities as a result of, or prior to use of, audio-visual materials?
s. Does the teacher show evidence of evaluating the material after use?
t. Does the teacher show evidence of evaluating his or her own accompanying techniques with audio-visual materials?
u. Does the teacher actually base judgments of value of materials and personal techniques on outcomes with pupils, that is, in the light of their reactions and learnings?
v. Does the teacher show signs of willingness to try new techniques with audio-visual materials?
w. Does the teacher tie the use of audio-visual presentations to problem-solving activities that pupils feel are their own purposes?
x. Does the teacher use audio-visual materials in relation to, and as a part of, valid teaching units?

6. *Are the relationships between curriculum planning and the audio-visual service program fruitful and cooperative and geared to community needs?*

a. Does the work on curriculum problems involve the people who are responsible for the audio-visual service program?

b. Do subject-matter specialists in the schools make use of audio-visual services in preparing their bulletins and curriculum guides?
c. Do curriculum specialists and the director of audio-visual services team up to provide the best learning experiences possible?
d. Do audio-visual and curriculum staffs assist each other as opportunities permit?
e. Do curriculum guides and other publications contain notations of the basic and supplementary audio-visual materials available?
f. Does the teacher make use of a variety of audio-visual experiences as made available to him or her?

7. *Are service center physical facilities adequate and if not, have plans and recommendations been made to school authorities?*

a. Have space needs been correctly analyzed?
b. Has space allotted been correctly utilized?
c. Have limitations in space been stated in writing, stressed, and repeated in annual reports to school authorities?
d. Is space allotment at the center sufficient to carry on service demands efficiently?
e. Have space needs been planned and sketched to scale for new services?

8. *Are adequate records kept and reports made to appropriate authorities?*

a. Does the director know the total distribution figures? By schools? Per teacher average?
b. Does the director know what the distribution figures would be if all teachers used one projected subject every week?
c. Does the director know which teachers have had pre-service and post-graduate courses in audio-visual materials?
d. Does the director know which teachers use audio-visual materials creatively?
e. Does the director know which teachers have made and which teachers can make significant contributions to in-service education?
f. Does the director report regularly what the continuing needs are from year to year?
g. Does the director know and report what the special needs are and when they have to be met?

h. Does the director know what expenditures ought to be made each year in each category of the budget in order to reach specified goals or operational levels?

i. Does the director know when materials and equipment were: purchased? repaired? replaced?

j. Does the director keep a system of records for comparison year by year to reveal growth and trends?

9. *Has a strong and effective system-wide organization been established to serve the audio-visual instructional needs of teachers?*

a. Have qualified individuals been selected and organized into a working force?

b. Are persons who contribute substantial amounts of time and energy adequately remunerated?

c. Have personnel services been organized in each school building to give the help needed by teachers?

d. Is the work of individuals recognized by top-level school authorities?

e. Are lines of communication firmly established between individuals who do the organization's work?

f. Are the individuals in the organization held together properly?

g. Is each working group made to feel that it is an indispensable part of the organization?

h. Have responsibilities been properly assigned to individuals and groups?

10. *Are effective efforts being put forth to ascertain strength and weaknesses?*

a. Have surveys been conducted to collect data?

b. Have principals and teachers been consulted to collect opinions and suggestions for improving services?

c. Have collected data been sufficiently analyzed, summarized, and interpreted?

d. Are programs being planned to correct any weaknesses detected?

e. Have ways been found to utilize reactions of learners?

11. *Are effective efforts being made to promote community understanding of the power of A-V materials in the learning process?*

a. Have groups of laymen and professional colleagues been selected to study and plan wise courses of action?

b. Have study groups been properly recognized by the superintendent and board of education?

c. Is the director making use of a variety of information channels?

d. Does the director seek to give communication services to his colleagues and to school officials in important communication projects?

e. Has the director balanced his use of communication media in terms of available facilities and adequacy of coverage?

f. Has the director succeeded in reporting and publicizing the school's activities comprehensively?

g. Do public relations programs for audio-visual services show signs of careful planning?

h. Are appropriate talents among the staff being utilized for public relations work?

i. Does the director recognize communication barriers in his community?

j. Does the director go about the process of surmounting communication barriers correctly?

k. Do school system authorities, particularly the school superintendent, school board members, curriculum specialists, and principals encourage the use of audio-visual materials by what they say and do?

12. *Are effective efforts being made to assess the significant values accruing to learners through the audio-visual service program?*

a. Are students learning to communicate more effectively through graphic expression?

b. Have students been asked for their opinions and value judgments?

c. Are research studies being conducted to determine unique values of audio-visual presentations?

The preceding questions, extensive as they seem to be, in no sense constitute an inclusive list, but they are nevertheless important. It should be noted that all the preceding questions have been so phrased that, with reference to the implied standards, positive answers always indicate strength, and negative answers indicate weakness. However, many of the questions ought to be answered preferably by means of a scale of responses. This pattern of response is shown in connection with the discussion of a later topic, "Choice of Measurement Symbols."

These basic questions point the way for the courageous director of audio-visual services to gather estimates of desirable change. He needs, of course, to choose with his colleagues the particular operational level at which proposed evaluation projects need to be conducted, and he needs to consider also the selection of appropriate local evaluation instruments and procedures.

LOCAL EVALUATION IINSTRUMENTS AND PROCEDURES

The job of local evaluation confronts the director with a number of knotty problems such as deciding on the appropriate operational level, the preparation of instruments for measurement, the establishment of standards or goals as reference points, the choice of measurement symbols for the desired degree of judgment, and taking action on the results. Because the director can hardly escape the task of formulating wise local policies and making sound decisions in solving these problems, suggestions will be made concerning them.

Suggestions Regarding Choice of Operational Levels. In connection with an earlier section dealing with the process of evaluation, five levels of evaluational action were described. These should be reviewed by the reader in connection with the suggestions that follow.

Level 1 is the absolute minimum, and this is the kind of continuous evaluation that every director must arrange to carry on. Throughout this book the director has been urged to collect facts, to know what is going on, to discover weaknesses, and to undertake programs to correct them. But other levels of evaluational action are also highly desirable. *Level 2* is helpful, and the director is urged to employ it, but this level may be made even more helpful, objective, and accurate by expanding the self-evaluation aspect of it to include school coordinators and a few other school colleagues. *Level 3* is another feasible level of evaluation action that every director could and should organize and execute. This and *level 1* constitute in the writer's view the desirable minimum of action. *Level 4* is, of course, only an occasional process, and *level 5*, while desirable, can also be carried out at widely spaced intervals. This level of action requires great organizational ability and a considerable amount of time and effort. When the director undertakes to operate at this level, he should make sure that the program is anchored to in-service education and curriculum planning so that outcomes may be more directly related to continuing activity for improving over-all teacher competence. This relationship also brings to the enterprise a reservoir of curriculum contributors. In making a final decision to operate at higher than levels 1 and 2, people who are to be affected by the decisions should be consulted and invited to participate.

Selection and Preparation of Evaluation Instruments. This problem could be more easily solved if a variety of short, thoroughly tested, valid instruments were available that could be selected according to need. The fact is that the available evaluation scales and check lists are not always directly applicable to the local situation. Thus, the director is urged to start with major and subsidiary criteria listed earlier in the chapter and to prepare instruments for the occasion, getting help from representative groups as needed. Suggestions for preparing instruments are:

1. Study available criteria and the format of various examples of practical evaluation procedures, getting permission to duplicate acceptable material, or purchasing copies as needed.
2. Use representative teacher committees to study problems involved, and help prepare instruments for their own and pupils' execution.
3. Decide on what aspects of the program need most to be evaluated.
4. Choose sections of the criteria presented in this chapter and expand them, taking care that additional questions call for quick, though penetrating, responses.
5. Prepare, if teachers are willing, the kind of instruments that can be validated, and whose reliability can be computed.
6. Prepare instruments that are brief and specific rather than time-consuming and comprehensive.
7. Prepare instruments for pupils as well as teachers, for directors, principals, and coordinators also.
8. Make sure that instruments are based upon accepted principles.
9. Decide first on what needs to be done with the data collected; then make sure that the responses called for will facilitate the desired judgments and action plans.

10. Choose instruments that will work best at the chosen operational level.

11. Decide before making the instruments if responses are to indicate status, change, direction of change, and rate of change; then strive for usable units, symbols, and indices.

12. Make sure that adequate instruction is given to teachers by bulletins, in teachers' meetings, or incorporated in the instrument, to obtain most correct observations and responses to each item in the instrument.

Several examples of evaluative instruments, either in complete or excerpted form, are now presented for quick reference as suggestions of activities, format, and areas that can be explored for constructing local evaluative devices. The director should, of course, keep abreast of developments in this field through study of periodical literature and by means of contacts with national committees and organizations.

Example 1: The following example is a brief excerpt from a check list prepared by the Connecticut State Department of Education for use in connection with its secondary-school evaluation program. The title of the instrument is *Teacher Self-Evaluation Check-List, How Do You Evaluate Your Audio-Visual Activities.*[12] The sections of criteria for checking by the teacher are arranged in the following four categories: Equipment, Organization, Utilization, and Teacher Education. In the utilization section, there are twenty-two short groups of questions. Groups 8, 11, and 21 follow as excerpts:

8. Do you make use of field trips as a learning device? Are you making the most of your community resources? Do students engage in the planning for field trips?
11. When a motion picture is used in your classroom or shop, do you adhere to a plan of *preparing* the group before showing the film, and following the showing with adequate *discussion* and *follow-up* activities? Do you select motion pictures which provide a challenge to the best judgments of the students? Do your students have a clearly defined purpose in the use *you* make of the motion pictures?

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[12] Connecticut State Department of Education, Joseph F. Murphy, Consultant, Hartford, Connecticut. The entire check list appears in Appendix A of *The School Administrator and His Audio-Visual Program,* Charles F. Schuller (ed.), Yearbook, Department of Audio-Visual Instruction of the NEA, 1201 Sixteenth Street, N.W., Washington, D.C., 1954, pp. 301–304.

21. Do students work cooperatively with you in the planning and execution of an audio-visual learning situation?

Example 2: The type of pupil instrument included by Schwartz[13] in his comprehensive set of criteria is shown in the example that follows. He lists ten questions to be asked students, with teachers taking notes on replies. Questions 1, 4, and 9 are quoted as follows:

1. Have audio-visual aids which have been used in your classes helped clarify ideas or problems for you? Can you give definite examples?
4. What instances of the use of audio-visual materials do you remember most? Why?
9. What are some of the strengths or weaknesses of the use of audio-visual materials as you have seen them presented in your classes?

Example 3: An example of a system-wide survey to discover teacher reactions to the audio-visual services program is provided by Westport, Connecticut.[14] The survey form is reproduced in full in its 1957 format. The relationship of the audio-visual director and the faculty Audio-Visual Advisory Committee to the questionnaire indicates that the evaluation may be an example of *level* 3, as described earlier. The survey form, however, could conceivably be altered to provide different kinds of data, both quantitative and qualitative. The survey form is as follows:

WESTPORT, CONNECTICUT, PUBLIC SCHOOLS
Audio-Visual Program Survey

As usual, your faculty Audio-Visual Advisory Committee is interested in your reactions to this year's program and your suggestions for its improvement. We would appreciate, therefore, your taking a few minutes of your time to complete the following short questionnaire. Since we appreciate your candid and impartial opinions, we have provided space for your comments. In order that we may begin our planning before the end of this school year, we ask that you return this completed form to your Audio-Visual Building Coordinator no later than Thursday, May 9.

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[13] John Charles Schwartz, Jr., *Op. cit.*, pp. 24–25.

[14] Division of Instruction, George E. Ingham, Director, Town School Office, Westport, Connecticut.

My evaluation and suggestions regarding our Westport A-V program are as follows:

Signed______________________ School______________________

1. How effective in the teaching process do you consider your use to be of the following types of A-V materials and techniques? Please check in the proper column *only* those which you utilize:

	Great Deal	*Some*	*Very Little*
Sound Films	______	______	______
Filmstrips	______	______	______
Flat Pictures	______	______	______
Slides	______	______	______
Bulletin Boards	______	______	______
Flannel Boards	______	______	______
Dioramas	______	______	______
Table Tops	______	______	______
Objects	______	______	______
Models	______	______	______
Specimens	______	______	______
Maps	______	______	______
Charts	______	______	______
Globes	______	______	______
Chalkboards	______	______	______
Field Trips	______	______	______
Demonstrations	______	______	______
Resource Persons	______	______	______
Disk Recordings	______	______	______
Tape Recordings	______	______	______
Radio Programs	______	______	______
TV Programs	______	______	______

Your comment:____

2. Sometimes teachers state that they cannot take advantage of A-V materials. Some of the reasons often given are listed below and coded by letter. If any apply to you, please indicate by writing the proper letter or letters in the space immediately following the material or practice.

REASONS FOR NON-USE BY LETTER

A. Lack of locally owned materials in my field.

B. Need help in finding suitable materials in my field.

C. Need help in preparation of materials.

D. Need more training in proper utilization.
E. Need help in operation of equipment.

MATERIALS AND PRACTICES

Sound Films____Filmstrips____Flat Pictures____Bulletin Boards____ Slides____Objects____Models____Specimens____Maps____Charts____ Globes____Flannel Boards____Dioramas____Table Tops____Chalkboards____Field Trips____Demonstrations____Resource Persons____ Disk Recordings____Tape Recordings____Radio Programs____TV Programs____

Comments:________________________

3. Some of you have indicated that our central school library of A-V materials is weak in the areas in which you are interested. Please check those areas in which you feel we are lacking. Add those which may have been overlooked here.

Mathematics __________	Language Arts __________
Social Studies __________	General Science __________
Biology __________	Chemistry __________
Physics __________	Industrial Arts __________
Homemaking __________	Arts and Crafts __________
Music __________	Modern Language __________
Health __________	Safety __________
Guidance __________	Other __________

Comments:________________________

4. Westport is a community rich in resource persons who should, when properly selected and oriented, be very valuable in our classrooms. Please indicate your reactions to resource persons in the proper spaces below.

a) The resource persons I use in my classroom during the school year number approximately ______.

b) I do not use resource persons because (1) they can't come when needed____; they talk over the heads of my class____; they talk down to my class____; they seem to be afraid of juvenile audiences____; there is no information about who is available ____.

c) I would be interested in having a guide prepared as to what resources persons are available and their specific interests.

Yes ____ No ____

Comment:________________________

5. Please indicate whether you have had one or more A-V courses either on the undergraduate level ____, graduate level ____, extension course ____, or in a local in-service workshop ____.

The preceding examples, out of context, seem to say to the director that he should get all the examples of common practice that he can feasibly obtain to provide good reference for a study committee intent on its own local problems but also intent on the establishment of standards for judgment and appropriate indices of status.

Establishing Standards of Reference. In this discussion the sources of criteria have already been enumerated, and these criteria are the ultimate standards to which all judgments of change are referred. The following basic questions need to be asked and answered. When is a school or classroom adequately equipped? When is a director superior, good, fair, or poor? What is a good in-service education program? What is a good public relations program? When are teachers competent in using audio-visual materials? When is the information program adequate? When is a service system in each school adequate? What makes a good audio-visual center? When is a personnel organization adequate? No mistake should be made about this because these questions can be answered in terms of present knowledge. And the chapters in this book provide, or point the way to, satisfactory answers. Such decisions, however, must be stated clearly and definitely. If higher than reasonable local goals seem to be desirable in the long run, these should be stated and not left in doubt. Standards of teacher competence, above all, must be defined in terms of best professional standards of teaching.

Choice of Measurement Symbols. Careful consideration needs to be given to the problem of symbols of judgment when measuring instruments are constructed. In general, evaluation forms should be arranged for quick responses; however, in some cases evaluators believe that teachers will reveal deeper insight into meaningful relationships if they write out answers to penetrating questions that have been explicitly phrased. This is a moot question. The examples and references already presented reveal that the following symbols of status and change have been commonly used:

1. Yes and no
2. Satisfactory and unsatisfactory
3. Condition 1 (missing), condition 2 (poor), condition 3 (fair), condition 4 (good), condition 5 (excellent)
4. 5–very superior, 4–superior, 3–average, 2–inferior, 1–very inferior

5. Great Deal, Some, and Very Little
6. 1–constantly, 2–periodically, 3–seldom, 4–never
7. + (Condition is present or satisfactory), – (Condition fairly or poorly met), O (Condition not met, or unsatisfactory), N (Not applicable to the situation).
8. Slightly, Moderately, Excellent
9. Poor, Fair, Good, Very Good, Excellent

Such symbols lend themselves to processes of summary, tabulation, generalization, and to certain forms of graphic portrayal. Also, when such symbols are accompanied in reports by adequate descriptions, they will be quite serviceable for local use. However, the director and his study committee should attempt to identify objective units to represent behavior as well as physical conditions.

Among earlier suggestions it was emphasized that the director and his committee should decide whether the responses to a particular instrument will suffice for the purpose originally intended. For example, a questionnaire filled out by teachers may reveal that 50 per cent of all respondents tied their usage of motion pictures to problem-solving activities developed with the students. Will such an index of utilization be satisfactory? Will it lend itself to a year-by-year comparison of teacher growth? Suppose further that a five-point rating scale dealing with bulletin board usage is made up by a teacher committee for all the elementary schools, and the teachers then rate themselves from (1) poor to (5) excellent on each item. Suppose also that scores show an average of (4) very good, with 25 per cent of the teachers scoring themselves at (3) good, or below. Should principals, a committee of teachers, or the A-V coordinator for the building also rate the teachers, using the same form? Directors and their committees will not only have to decide in all cases what measuring units will be suitable and of maximum usefulness, but they will have to decide also who should do the rating, writing, or testing. Such matters, of course, cannot be decided apart from knowledge of the nature and purpose of the evaluative device itself and apart from what will be acceptable in a given local situation. In the case of rating scales, as for comprehensive check lists or even for shorter lists of items that call for subjective judgments, it is desirable to arrange at least three terse descriptions along a five-point scale for each item. When clusters of such observations and judgments appear, it is likely that dependable indications of strength, weakness, or average status will be shown. In the matter of equipment and facilities growth, observations of changes may, as has already been pointed out, be easily objectified in terms of specified goals, based on desired local services or upon nationally recognized standards and recommendations.

Caution and critical appraisal are called for because such symbols of measurement as percentages and total class periods where one or more kinds of audio-visual materials were used, while helpful in general, may not after all lead to accurate evaluation of desirable growth. A few possibilities for the director to explore in seeking more objective methods of scoring and rating than "yes" or "no" are as follows:

1. Construct evaluational instruments in the form of teacher tests of the objective-type, and score them with keys, using point scores that may be treated statistically.

2. In grading essay-type answers, make up scoring rules and use point scores that may be interpreted statistically.

3. Assign arbitrary point scores in accordance with degree of adequacy, provided that appropriate scales have been constructed.

4. Express the change in equipment and facilities status as the percentage of net increase in units above the basic inventory in any given category. That is, if motion picture projectors increased from fifty to sixty, the percentage increase or change would be 20 per cent.

5. Express rate of change as percentage of the distance covered enroute to a recognized goal. That is, to reach a long-term, ten-year goal of one hundred motion picture projectors from a base of fifty projectors, the rate of change would have to be 5 per cent per year on the average.

6. Establish numerical units for behavior, such as (a) number of times films were used by a teacher, for instance, in direct relation to problems; (b) number of teachers who used all films designated as *basic* in terms of specific teaching units and problems; (c) number of times films were used to introduce units of work; and (d) number of times materials were produced as learning activities.

7. Make repeated similar observations to obtain comparison of scale readings and other judgments.

8. Set up a system of marking symbols, using the same letter-grade as currently in effect in the regular school department marking

system, and define each symbol verbally or quantitatively as the case demands.

Taking Action on Evaluation Findings. The time of an evaluation, with its system-wide participation of the teaching staff, provides a unique climate for action. Directors and their general study and school-building committees ought never to allow this opportunity for follow-up activity to slip through their fingers. Evaluation programs that are oriented toward curriculum improvement and in-service education lead naturally into the following recommended processes: (1) summarization and generalization of the evidence; (2) reporting results interestingly to staff in written and graphic form by bulletins; (3) suggesting study of results prior to sectional, school, or committee meetings; (4) holding a series of analysis and planning meetings where some significant problems may be listed in priority for consideration; and (5) ascertaining in those meetings the underlying causes for weak conditions that exist, and formulating a set of recommendations for action and improvement.

When inaction follows a period of critical appraisal, something is wrong; something is weak about the director's leadership. Of course, to plunge in, disregarding what is known about the effects of proper pacing, and attempt to correct all the ills at once would be professional suicide, but of course there is little danger of this if those who are to be involved in the decisions help make them. Furthermore, it is certain that not all the ills will be eliminated by work on the part of teachers. Desirable follow-up action may well provide the opportunity for the entire teaching staff as well as for lay representatives to exert pressure on top school administrators, supervisors, school board members, and city officials to share the burden of responsibility for bringing about recommended modifications. Opportunities like these may come all too seldom. They need not be missed.

SUGGESTED ACTIVITIES

* 1. Prepare in skeletal form a comprehensive evaluation instrument, using the six basic principles introduced in Chapter One for organizing an audio-visual service program as the major division of criteria.

2. What would the audio-visual director be likely to gain if he added to his own personal evaluation activities those described briefly in the *third level* of action discussed in this chapter?

* 3. Examine several of the presently available appraisal scales (Durr, in AVCR; Schwartz, Wm. C. Brown Co.; AVI magazine, *Profile;* DAVI criteria; and selected examples of city-program evaluation check lists, scales, or survey forms), and answer the following questions: (a) What units of measurement were called for? (b) What standards were stated or implied? (c) What modifications in the *one* check list or form you liked best would you suggest if it were to be applied to a local situation with which you are familiar?

* 4. Using declarative sentences for each item, state what in your best judgment is the most definite and reliable standard that you and members of your working group know about: (a) in numerical units for the number of films for a school system film library, and the number of films to be used by grades in elementary schools and by subject in secondary schools; (b) in numerical units for school equipment and classroom facilities; (c) in verbal descriptions of levels of action on a three-point scale for teacher use of materials in terms of their relationship to problem solving only; (d) the same as (c) for the relationship to teaching units; (e) the same for organizing and handling physical arrangements for their use; (f) the same for their relationship to introduction of new work; (g) the same for their relationship to teacher purposes (educational objectives at the usable classroom level).

5. In some selection procedures, materials are designated as "basic" and "supplementary" and are so described in official publications of source units and curriculum guides. How could summaries of such recommendations, if at all, be used in setting up tentative and quantitative standards of frequency-of-use levels?

* 6. Study the recommendations made regarding long-term planning for budgeting purposes, and explain how having numerical figures of total needs helps in stating the evaluational judgments of status, amount of change, and rate of change?

* 7. How does specific knowledge of teacher competence status assist the summary of evaluational judgments in this subjective area? (See Chapter Three.)

8. In any appraisal plans that you formulated, would you be able to collect and utilize evidence of improved learning? If so, how would you go about it? Would standardized tests help you in this regard?

* 9. In what specific ways could you enlist the assistance of teachers in an evaluation program?

* 10. Construct, in accordance with plans agreed upon in class, a system of evaluation instruments in the form of objective test questions involving raw scores for interpretation purposes. Which of the general

criteria (that is, the twelve focal points for observation and analysis) identified in this chapter would lend themselves for the written objective examination type of analysis? Under what conditions do you believe teachers would approve of such evaluation proceedings?

11. Is a comprehensive school-system survey of physical facilities an important foundation for any contemplated evaluation program? Explain.

12. Throughout this book the director has been urged to "get the facts." Make a list of the kinds of facts that a director ought to obtain (a) just once, (b) every five years, (c) every year, (d) every month.

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(See also suggested references dealing with standards at end of Chapters Five, Six, and Seven.)

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